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DWPF GLASS MELTER TECHNOLOGY MANUAL (U) VOLUMES 1 - 4

by

D. C. Iverson

Westinghouse Savannah River Company
Savannah River Site
Aiken, South Carolina 29808

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DWPF GLASS MELTER TECHNOLOGY MANUAL

VOLUME 4 - DRAWING LISTS & ORDER SPECIFICATIONS

J. D. Gutmann, Jr
March 1989

PROJECT S-1941 - SAVANNAH RIVER PLANT
MACHINE DRAWING & PARTS LIST 2007

<u>PAGE</u>	<u>ARRGT. NOS.</u>	<u>DESCRIPTION</u>
1	W709716	Melter Support
	W709732	Melter Tilting Arrgt.
2	PV178972	TNX Melter Shell
3,4	W710018	Melter Assembly, Sh. 1
	W710031	Melter Assembly, Sh. 2
	W710140	Melter Assembly, Sh. 3
5	W710134	Dip Tube Assembly
	W710476	Thermowell Assembly
6	W711123	Melter Assembly, Sh. 4
7	W710760	Riser Heater Assembly
8	W710493	Melter Assembly, Sh. 5
9	W710674	Melter Assembly, Sh. 6
10	W712221	Melter Assembly, Sh. 7
11	W711615	Dump Valve Probe
12	W712745	Pneumatic Diagram
	W712770	Pneumatic Panel
13,14	W709935	Refractory Assembly
	W710017	Refractory Assembly, Sh. 2
15	W711020	Refractory Saw Cutting Fixture
16	W711031	Refractory Saw Cutting Fixture
	W711035	Riser Refractory Binding Straps
	W711015	Insulation Forming Fixture

PROJECT S-1941 - SAVANNAH RIVER PLANT
MACHINE DRAWING & PARTS LIST 2007

<u>PAGE</u>	<u>ARRGT. NOS.</u>	<u>DESCRIPTION</u>
17	W711349	Refractory Gaging Fixture
18	W709479	24" Can Carrier Arrgt.
	W709738	48" Ditch Can Carrier
19	W710618	Calciner Lift Yoke
20	W713844	Pour Spout Shroud
21	W713636	Pour Spout Shroud (Vacuum Alternate)
22	W715293	TNX Top Hd. Clearances

SHTS 22 7/2/51 ADDED BUT NOT ISSUED 4/2/51

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend.	To Fld.				
35		1		1	W-709716	18	18	18	MELTER Support ASSEM.	1673	KELLER	1, 1, 1 78736 07043 01629
					ASSEMBLY				B/M ITEMS 1-21			
35	1	1	-	1	W-709732	5	5	5	MELTER TILTING ARRG.	1651	PHILA. GEAR	1, 1, 1 78723 01629
	1	1	-	1	BPF 212891				LINEAR ACTUATOR	1651		13087
37	2	2	-	2	D-178813-A	0	0	0	SHIM	1673	KELLER	01629 07043
37	2	2	-	2	D-178860-A	0	0	0	BRG. MODIFICATION			
37	4	4	-	4	D-178867-A	0	0	0	BEARING GUIDE			
37	1	1	-	1	D-178937-A	11	11	11	MELTER SUPPORT 1-23			46981
37	4	4	-	4	D-178938-A	0	0	0	SKID MODIFICATION			
37	4	4	-	4	D-178939-A	0	0	0	SKID MOUNT PLATE			
37	1	1	-	1	D-178940-A	0	0	0	SUPPORT			
37	4	4	-	4	D-178991-A	0	0	0	FILLER PLATE			
37	2	2	-	2	D-178992-A	0	0	0	SUPPORT GUIDE			
37	2	2	-	2	D-179025-A	0	0	0	STOP ARM			
37	2	2	-	2	D-179277-A	0	0	0	BRACKET			
35					W 712868	0	0	0	INX MELTER: MOTION VIEWS			78749

ISSUED 10/31/72; 1-9-79; 3-26-79; 4-11-79MACHINE INX MELTER

Engineering Number		
Area	Unit	Item
G-5	100	35

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

PAGE 1 OF 22

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER PLANTPROJECT 951741

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend.	To Fld.				
35		1		1	PV178972	39	35	39	TNX MELTER SHELL ASSEM.	1491 REF 1613 1568 REF	NODTER	01626 1587 47510 6487 78718 78736
37	1			1	D178942-A	24	24	24	MELTER SHELL SH. 1	1568 REF		01626 47510
37	-	-	-	-	D178943	47	47	47	" " SH. 2	1568 REF		
37	-	-	-	-	D178922	22	22	22	" " SH. 3	1568 REF		
37	-	-	-	-	D178956	6	6	6	" " SH. 4	1568 REF		
37	1			1	D178886-A	23	23	23	TOP COVER SH. 1	1568 REF		
37	-	-	-	-	D178890	12	12	12	" " SH. 2	1568 REF		
37	2			2	D178894	10	10	10	SUPPORT ARM	1568 REF		78736
-	1		1	2	BPF212868				HEAD FLG O-RING	AXC 1534-W	UAP	-
					BPF212902				NODTER WELD DETAILS	AXC 1613-W	NODTER	20609

ISSUED 1-9-79; 3-26-79; 4-11-79; 10-15-79MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
4510	100	31

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9 S 1941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35					W 710018	66		66	GLASS MELTER ASSEM			01627 47507 78718 78736 78748
									SHEET 1			
									B/M. ITEMS 1-5, 2029		BY ELECTRICAL	
									B/M ITEM 6		BY INSTRUMENT	
					BPF 212926				B/M ITEM 35	1806	PRESS. PROD.	13106
									B/M ITEMS (EXC. AS NOTED)		FIELD CONSTR.	
					BPF 212927				EXPANSION JOINT	1594	PATHWAY BELLAWS	
									FLEXITALLIC GASKETS		FIELD CONSTR.	
35					W 710031	9		9	GLASS MELTER ASSEM.			01627 47507 78748 64874
									SHEET 2			
35					W 710140	9	5	9	GLASS MELTER ASSEM.	1647	KELLER	01627 47507 64874
									SHEET 3			
37	4				D 178968-A	3	3	33	6" DIA. ELECTRODE	1863-1517 1647	HUNT. ALLOY KELLER	01636 01627
	4				-B				FLANGE	1647	KELLER	
37	2		1	3	D 178814-A	6	6	6	INSULATOR	1652	COORS	78748 01627
	4		2	6	-B							
	54		20	74	-C							
	16		8	24	-D							

ISSUED 1-9-79; 3-26-77; 4/1/77MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
G.510	100	-

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT
PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

 PLANT SAVANNAH RIVER

 PROJECT 1514+1

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
37	32		8	40	D 178814-E	6	6	6	INSULATOR	1652	COORS	
37	48				D 178815-A		3	3	WASHER	1647	KELLER	01627
37	2				D 178908-A	2	2	2	GASKET	1647	KELLER	01627
	2				-B							
	4		1	5	-C							
	4		1	5	-D							
	4		1	5	-F							
37	8		8	16	D 178981-K	18	18	18	GASKET	1568 REF 1715	CARBORUND	01627
37	1				D 179026-A	5	5	5	PIPE (NOZZLE J)	1799	WEST ENG	01627
	1				-B				" (NOZZLE G)			
37	2				D 179029-A	0	0	0	RETAINER			01627
	2				-B				RETAINER			
37	1		1	2	D 179048-A	0	0	0	INSULATOR (NOZZLE J)	1715	CARBORUND	01627
	1		1	2	-B				" (NOZZLE G)	1715	"	
37	4		2	6	D 179030-G	16	16	16	INSULATOR	1652	COORS	01627
37	1		1	2	D 179264-A	1	1	1	SLEEVE	1715	CARBORUND	01627

 ISSUED 1-9-79; 3-26-79; 4-11-79

 MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
G510	100	-

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35		1	-	1	W-710134-B	13	12	12	DIP TUBE ASSEMBLY B/M ITEMS 2 & 3	1647	KELLER	47507 46967 01627
												01627
37	1		-	1	D-178812-A	0	0	0	INSULATOR SUPPORT			01627
37	1		-	1	D-178816-A	1	1	1	FLANGE			07007
37	1		-	1	D-178908-E	2	2	2	GASKET	1517	HUNT. ALLOY	46967 01627
37	1		-	1	D-178923-A	19	19	19	DIP TUBE - LEVEL	1647	KELLER	07007 01627
37	1		1	2	D-179030-F	16	16	16	INSULATOR	1652	COORS	46967
35		1	-	1	W-710476-A	8	8	8	THERMOWELL ASSY B/M ITEMS 1 & 2	1647	KELLER	47507 46967 01627
37	1		-	1	D-178812-A	0	0	0	INSULATOR SUPPORT			01627
37	1		-	1	D-178816-A	1	1	1	FLANGE			01627 07007
37	1		-	1	D-178908-E	2	2	2	GASKET	1517	HUNT. ALLOY	01627 46967
37	1		-	1	D-179008-A	12	12	12	THERMOWELL	1647	KELLER	01627
37	1		1	2	D-179030-F	16	16	16	INSULATOR	1652	COORS	

ISSUED 10/31/78; 1-9-9; 3-26-79; 4-11-79MACHINE INX MELTER

Engineering Number		
Area	Unit	Item
G-3.3	100	32

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35					W711123	56	43	56	GLASS MELTER ASSEM	1647	KELLER	01628 47507 78718 78748
									SH. 4			
37	-		-	-	D178814-C	6	6	6	INSULATOR (SEE P 3)	1652	COORS	78748 01627
	6		4	10	-F				"	1652	"	
37	6			10	D178815-A	3	3	3	WASHER * SEE PAGE 10	1799	WEST ENG	01627
37	2				D178908-H	2	2	2	GASKET	1799	"	01627
37	2		4	6	D178981-T	13	18	18	"	1715	CARBORUND.	01627 78718 78735
37	1				D179027-A	11	11	11	TERMINAL CLAMP	1799	WEST ENG	01628 78718 78728
37	1		1	2	D179030-D	16	16	16	INSULATOR	1652	COORS	01628 78718
37	1			1	D179070-A	4	4	4	RISER COVER	1613	NOOTER	01628 78718
37	1			1	D179086-A	5	5	5	BRACKET	1799	WEST ENG	01628 78718 7874
37	1			1	D179086-B				BRACKET	1799	"	
37	1		1	2	D179095-A	1	1	0	INSULATOR	1652	COORS	78748 01628
37	1				D179249-A	0		0	COVER	1613	NOOTER	01628 78718
37	1				D179250-A	7	7	7	INSULATOR RETAINER	1647	KELLER	01628 78748
37	1		①		D179267-A	28	28	28	FOUR SHOUT HEATER	1517 1647	INT. ALLOY KELLER	01628 62286
/	1		AXC 2470		-B				FLANGE			
/	1		4-50 SEE PG 25		-C				PLATE			

ISSUED 3-26-79; 4-11-79

MACHINE INX MELTER

Engineering Number		
Area	Unit	Item
G510	100	-

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST 2007
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
37	1			1	D 179 385	0	0	0	MOUNTING PLATE	1799	KELLER	78718
37	1				D179274-A	7	7	7	INSULATOR	1647	KELLER	78718 01628
/	1				" -D				"	"	"	
35		1	1	2	W710760-A	6	2	6	RISER HEATER ASSEM	1647	KELLER	01628 47507, 18718 8733
37	1		1	2	D179046-A	0	0	0	INSULATOR	1647	"	01628
37	1		1	2	D179047-A	0	0	0	RETAINING RING	1799	WEST ENG	01628
37	1		1	2	D179078-A	26	24	26	HEATER *	1517 1647	HUNT. ALLOY KELLER	01636 01628 78748
									INSULATORS FOLLOWING			
									ARE ASSEMBLED WITH HTR			
37	5		5	10	D179054-A	2	2	2	INSULATOR *	1647	KELLER	01628
/	17		17	34	-B				" *	"		
/	8		8	16	-C				" *	"		
/	1		1	2	-D				" *	"		
/	1		1	2	-E				" *	"		
37	2			2	D178981-M	18	18	18	GASKET	1568 REF 1775	CARBORUND.	01627
/	2			2	-N				"		"	

ISSUED 3-26-79 4-11-79MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
5	110	-

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9 S1941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35		1			W 710493	2		2	GLASS MELTER ASSY SH.5 (JUNCTION BOX)			01629 47507 78748
37	3		2	5	D 178913-A	0	0	0	INSULATOR	1652	COORS	01629
	3		2	5	-B				"	1652	"	
37	2			2	D 178914-A	1	1	1	TERMINAL POST	1799	WEST ENG.	78735 01629
	1			1	-C				"			
	3			3	-B				NUT			
37	1			1	D 178984-A	0	0	0	JUNCTION BOX			01629
	1			1	-B				COVER (W/O VENTILATION)			
37	1			1	D 179011-A	0	0	0	GASKET			01629
	9			9	-C				"			
	4			4	-E				"			
37	2			2	D 179023-A	0	0	0	SPACER			01629
37	6		1	7	D 179030-E	16	16	16	INSULATOR	1652	COORS	01629
37	3				D 179096-A	2	2	2	TERMINAL CLAMP	1799	WEST ENG.	78718 (78735) 01629
37			1	1	D 179113-A	0	0	0	COVER (WITH VENTIL.)			01629
37	1			1	D 179186-A	0	0	0	SHIELD			01629
37	2			2	D 179188-A	0	0	0	SHIELD			01629

ISSUED 1-9-79; 3-26-79; 4-11-79MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
6510	100	-

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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PLANT

SANDWICH RIVER

55/5

[illegible]

Engineering Number		
Area	Unit	Item
100	100	-

DU PONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST *2007*

ISSUED 1-9-9; 3-26-79; 4-11-79

MACHINE • TNX MELTER

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MACHINE DRAWINGS AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT

9S1941

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare Total		On Dwg.	To Vend	To Fld.				
35			1	W712221	10	7	10	DUMP VALVE ASSEM.	1647	KELLER	78718 1588 01629 16487 98748
37	4		4	D178814-C	6	6	6	INSULATOR	1652	COORS	78748 01627
4				-D							
				-G							
				-K							
37	4		4	D178815-A	3	3	3	WASHER	1647	KELLER	01627 01636 01629
37	1		1	D178917-A	1	1	1	CLAMP			
	1		1	-B				HOLDER			
	1		1	-C				CAP			
37	4		4	D178981-R	18	18	18	GASKET	1568 REF 1715	CARBORUND.	01627
8				-S							
37	1			D179274-B	7	7	0	INSULATOR	1647	KELLER	01628
37	1	1	2	D179278-A	0	0	0	PLUG	1930	THERM. AM. FUSED METZ HUN. ALLOY	01629 01636 01627
37	1			D179266-A	19	15	19	DUMP VALVE HEATER	1647	KELLER	78748 94875

Engineering Number		
Area	Unit	Item
G510	100	-

ISSUED 3-26-79; 4-11-79; 10-22-79

MACHINE TANK MELTER

PARTS LIST

2007

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E I du Pont de Nemours & Company
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35		1		1	W711615	4	0	4	DUNE VALVE PROBE ASSY	1799	WEST. ENG.	01629
									ITEM 1-21			
					W711615	1	-		B/M ITEM 9 (4 Pcs)	1799		
									B/M ITEMS 10, 20, 21	1799		
37	2			2	D17914-C	6	6	6	WHEEL SET	1652	COORS	78748 01627
	1			1	-D							
	1			1	-F							
37	1			1	D17915-A	4	3	4	WHEEL SET			01627
	1			1	-F							
37	12			12	D179081-S	12	12	12	CARPET	MEGA REF 1715	CARPOCUM DUM	01627
37	1			1	D179122-A	0	0	0	SUPPORT BRACKET	1799	WEST ENG.	01629
37	1			1	D179123-A	0	0	0	PROBE ROD			01629
37	1			1	D179124-A	0	0	0	SUPPORT BRACKET			01629
37	1			1	D179125-A	0	0	0	BRACKET			01629
37	2			2	D179196-A	0	0	0	SHAFT			01629
	2			2	-F				SHAFT			
37	1			1	D179241-A	1	1	1	SUPPORT ANGLE			33211 01629
37	1			1	D179242-A	0	0	0	BRACKET			01629
37	1			1	D179244-A	0	0	0	SHIM			01629

ISSUED 3-20-79; 4-11-79; 5-5-79

MACH

TRX N/A L11 A

Engineering Number		
Area	Unit	Item
37	10	

DUPONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 00007

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14 3321 112 5 0 0

PLANT

PROJECT

[illegible]

ISSUED

MACHINE

Engineering Number		
Area	Unit	Item
G510	100	33

E I DU PONT DE NEMOURS & COMPANY
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WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2207

PAGE

MACHINE DRAWING AND PARTS LIST

PROJECT 9S1941PLANT SAVANNAH RIVER

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare Total		On Dwg.	To Vend.	To Fld.				
35	1		1	2	W709935	12	12	REFRACTORY ASSEM.	SEE 1568 REF	4. REF 1568 REF	01630 18718 19485
35	-		-	-	W710017	13	13	REFRACT. ASSEM. SH. 2	1568 REF 1568 REF	1568 REF 1568 REF	01630 19485
37	1		1	2	D178981-A	18	18	LOWER HEAD INSERT	1715 (REF)		19485
	1		1	2	-B			INTERSECTING SLEEVE			
	1		1	2	-C			POUR SLEEVE			
	1		1	2	-D			SLEEVE			
	1		1	2	-E			"			
	1		1	2	-F			END PIECE			
	1		1	2	-G			GASKET			
	1		1	2	-H			SPACER			
					BPF 212873			REFRACTORY SPECS	1568 REF 1491	CARBORUND	13471 13286
								"	1568	TOLEDO ENG	
								"	1595	ROCK OF AGES	
								"	1596	CARBORUND	
								K-3 MACHINING	1739	R. C. F. A.	
								DSM DISPENSING PUMP	1845	BLUE IND.	

Engineering Number		
Area	Unit	Item
600	100	24

 E I DU PONT DE NEMOURS & COMPANY
 INCORPORATED
 WILMINGTON, DELAWARE
 ENGINEERING DEPARTMENT
 PARTS LIST

ISSUED 1-7-77; 3-26-79; 4-11-77MACHINE TANK MELTER SYSTEM

13.1.22

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 9 S 1941

[illegible]

ISSUED 1-11; 3-26-77; 4 11 77

MACHINE TMX MELT-B SYSTEM

Engineering Number		
Area	Unit	Item
G510	100	34

E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2007

PAGE 19 of 2.

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT

95 1941

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare Total		On Dwg.	To Vend.	To Fld.				
35 -	1		1	W711020	4	4	4	REFRACTORY SAW	1739(REF) 1748	KELLER	01637
								CUTTING FIXTURE - (SIDE WALL BLOCKS)			
								CONSISTING OF:			
37 1	1		1	D179146A	6	6	6	CAM			
37 1	1		1	" -B				CAM			
37 1	1		1	D179147A	4	4	4	FRAME			
37 1	1		1	D179148A	0	0	0	SUPPORT			
37 1	1		1	" -B				"			
37 1	1		1	" -C				"			
37 1	1		1	" -D				"			
37 1	1		1	" -E				"			
37 1	1		1	" -F				"			
37 1	1		1	" -G				CLAMP			
37 1	1		1	" -H				"			
37 1	1		1	" -J				"			
37 3	3		3	" -K				CLAMP			
37 6	6		6	" -L				ROD END			
37 2	2		2	D179149-A	1	1	1	BASE			

Engineering Number		
Area	Unit	Item
4-5	100	34.9

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2001</u>		
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ISSUED 1-1-79; 3-26-79; 4-11-79MACHINE TNX MELTER SYSTEM151F22

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35	—	—	—	1	W711031	0	0	0	REFRACTORY SAW CUTTING FIXTURE	1739 REF 1748	KELLER	01637
37	1	—	—	1	D179150-A	3	3	3	FIXTURE	1739 REF 1748		
37	—	—	—	—	D179153-A	20	20	20	REFRACTORY	FOR INFORMATION PURPOSES ONLY SEE PAGE 14		
37	—	—	—	—	" -B	1	1	1	"			
37	—	—	—	—	" -C	1	1	1	"			
37	—	—	—	—	" -D	1	1	1	"			
35	2	—	—	2	W711035	3	2	3	RISER REFRACTORY BINDING STRAPS	1748	KELLER	70819
35				1	W711015	0	0	0	INSUL. FORM. FIXT.	1613	NOOTER	
37	1			1	D179156-A	1	1	1	LOWER FORMING FIXT.	1613	"	
37	1			1	D179157-A	0	0	0	UPPER FORMING FIXT.	1613	"	

ISSUED 1-17, 3-25-77, 4-27MACHINE TNX MELTER SYSTEM

Engineering Number		
Area	Unit	Item
G-510	100	34.7

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35				1	W 711349	11	11	10	REFRACTORY GAGING FIXTURE	1613	NOOTER	01637
37	1			1	D179194-A	13	13	7	BASE			
37	1			1	D179195-A	25	25	25	SUPPORT			
	1			1	-B				LOCATING PLUG			
	1			1	-C				K-3 INSERT POSITIONER			
37	1			1	D179227-A	10	10	10	BRACKET			
37	2			2	D179229-A	12	8	12	POST (SEE W 710017)			78736
	1			1	-B				CENTER			
	1			1	-C				ARM			
	1			1	-D				ROD			
	1			1	-E				SCRIBE			
	2			2	-F				CLAMP			
	2			2	-G				PLATE (SEE W 710017)			
	2			2	-H				PAD (SEE W 710017)			
37	1			1	D179248-A	0	0	0	DUMMY HEATER	1876	UFF MACH.	

ISSUED 1-9-9 ; 3-25-79 ; 4-11-79

MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
45	100	31

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend.	To Fld.				
✓ 35	4			4	W709479	46	42	46	24" CAN CARRIER ARRGT.	1661	BOGOTT	01630 46974 78755
									COMPLETE WITH LOAD CELLS			
									& ELECTRICAL EQUIPMENT			
✓ 37	1				D178994-A	9	9	9	CARRIER			01630 46974 78755
✓ 37	1				" -B				GRATING			78755
✓ 37	1				D179262-A	12	5	12	BRACE			78755 01630
					BPF 212 919				AIR PALLET TRUCK	1660		
37	1				D179477-A	2	1	2	HEIGHT ADJ. FUEL	1661		78755
35	1			1	W709738	5			48" DITCH CAN CARRIER			
									w/o BRACE & LOAD CELLS			
✓ 37	1				D178994-A	9	9	9	CARRIER, DITCH CAN	1661		78755
✓ 37	1				" -B				GRATING	1661		
35					W709738	5			48" CAN CARRIER ARRGT.		BY PLANT	
									COMPLETE WITH BRACE, LOAD CELLS			
									& ELECTRICAL EQUIPMENT			
37					D178994-A	13	9	13	CARRIER			78755
					" -B				GRATING			
37					D179230-A	1			BRACE			
35					W712846	0	-	0	CAN CARRIER STOP ASS'Y.		FIELD CONSTR.	78752

ISSUED 1-11-79; 3-25-79; 4-11-79MACHINE TNX MELTER SYSTEM

Engineering Number		
Area	Unit	Item
9510	200	18420

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951941

[illegible]

ISSUED 1-17-79; 3-26-79; 4-11-79
MACHINE TNX MELTER SYSTEM

Engineering Number		
Area	Unit	Item
50	300	31

E I DU PONT DE NEMOURS & COMPANY
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ENGINEERING DEPARTMENT

PARTS LIST 2007

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
		1		1	W713844	3	-	3	POUR SPOUT SHROUD ASSY W/B/M ITEMS 1- 5	—	FIELD CONSTR.	62286 78756
		1		1	D179494-A	4	-	4	SHROUD HOUSING			62286 33211 78756
		1		1	D179497-A	1	-	1	SIDE INSULATOR			62286 78756
		1		1	-B				SIDE INSULATOR			
		1		1	-C				TOP INSULATOR			
		1		1	-D				COVER INSULATOR			
		1		1	-E				FRONT INSULATOR			
		1		1	-F				BACK INSULATOR			
		1	2	3	D179496-A	0	-	0	CANISTER ADAPTER			78756
		1	2	3	-B				CANISTER ADAPTER			
		2	4	6	-C				RETAINER			
		2	4	6	-D				SUPPORT			
		4	8	12	-E				STAND OFF			
		1	2	3	-F				CLIP			
		1		1	-G				COVER			

ISSUED 6-29-79 ; 9-5-79

MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
G510	100	40.23

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST 2007
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 981941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vond	To Fld.				
35		1		1	W 713636	2	-	2	POUR SPOUT SHROUD ASSEM	-	FIELD CONSTR.	70816
37	1			1	D 179541-A	6	-	6	SHROUD	-		33211
37	1			1	D 179542-A	0	-	0	SHROUD	-		
37	1			1	D 179566-A	0	-	0	CAP	-		
	1			1	- B				SLEEVE			
NOTE:									THIS SHROUD ASSEM. IS AN ALTERNATE DESIGN TO REPLACE SHROUD W 713844 WHEN POURING INTO CANS UNDER VACUUM WITHOUT TILTING MELTER			

ISSUED 8-1-79; 8-9-79; 9-5-79

MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
GEN	100	41.03

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST 2007
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PROJECT 951941

ISSUED 4.29.80
MACHINE TNX MELTFN

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2007

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH, MISSISSIPPI

PROJECT WR 861091 (951941)

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35		1		1	WT16377	3	0	3	ALT. HOT P HEATER ASSY	AXC 2599	CELLER	
37	1			1	DI19054-A	0	0	0	INSULATION			
37	1			1	DI19054-A	0	0	0	RETAINING RING			
37	1			1	DI80085-A	6	6	6	HEATER FLANK			
									INSULATION			
									ARE ASSEMBLED W/HEATER			
37	20			20	DI19054-F	5	5	5	INSULATION *			
37	12			12	-G				" *			
37	2			2	DI19054-F	12	12	12	GASKET		By PLANT	
	2			2	DI19054-F				"		By PLANT	

ISSUED NOT ISSUED

MACHINE _____

Engineering Number		
Area	Unit	Item
7	100	-

DU PONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH PIER

PROJECT WR 861103 (951941

[illegible]

ISSUED

MACHINE

TNX MELTER

Engineering Number		
Area	Unit	Item
G510		

WILPOND
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 3007

PAGE 24

100-44361-100

PROJECT NR 861091 (95194.

ISSUED NOT ISSUED
MACHINE 1000 / 1000

DUPONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST

PAGE

PLANT SAVANNAH RIVER.

PROJECT 361189

Engineering Number		
Area	Unit	Item
G510	100	

NOT ISSUED

ISSUED

MACHINE
TNX MELTER SYSTEM

ELLIPTECH
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

MACHINE DRAWING AND PARTS LIST

PLANT _____

PROJECT 861091

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
					W717541	0	-	0	SET-UP STATION APPGT		BY PLANT	65569
					W717406	0	-	0	SET-UP STATION Assy			
37	1			1	D180323-A	0	-	0	SUPPORT			
	1			1	D180324-A	0	-	0	LOCATING CONE & SCREW			
	1			1	D180325-A	0	-	0	GUIDE RAIL			
	1			1	-B				GUIDE RAIL			
	2			2	-C				GUIDE PLATE			
	1			1	D-180527-A	0	-	0	PLATFORM			
	4			4	D-180538-A	0	-	0	HANDRAIL			

ISSUED NOT ISSUEDMACHINE TX MELTER

Engineering Number		
Area	Unit	Item

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2507</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 861091

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mech	Spare	Total		On Dwg.	To Vend	To Fld.				
35					W718047	0		0	RESISTANCE HTR ASS'Y (SECTIONS) W/B.M. ITEMS 1 THRU 6			
35					W718373	0		0	RESISTANCE HTR ASS'Y SHT 2 (SECTIONS)			
37	1				180767-A	0		0	COVER MODIFICATION			
	1				-B				SHIELD			
	2				-C				RETAINER PLATE			
	2				-D				PLUG			
	2				-E				INSULATOR			
	2				-F				RETAINER			
	2				-H				RING			
	2				-J				HEATER			
	2				-K				HEATER			
	1				180791-A	0		0	PLATE			
	8				-B				INSULATOR			
	6				-C				SPACER			

ISSUED NOT ISSUED
 MACHINE TNX MELTER (CFM/SFCM)

Engineering Number		
Area	Unit	Item
G510	100

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2007</u>

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER.

PROJECT 861091

[illegible]

ISSUED ACT ISSUED
MACH' TNX MELTER (CFCM / SFCM)

Engineering Number		
Area	Unit	Item
G10	100	

DU PONT
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

[illegible]

ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L.S - MINOR CHGS 1-21-85
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MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
9510 G510A

E I DU PONT DE NEMOURS & COMPANY
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WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2187

PAGE 2

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT

954234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
	Per Assy	Per Mach	Spares Total		On Dwg.	To Vend.	To Fld.				
									AXC		
		REF.		W730434				THERMOWELL ASS'Y (VAPOR)	—	PAGE 99	75088
		REF.		W730027				LEVEL DIPTUBE	—	PAGE 41	"
		REF.		W743477				DUMP VALVE ASS'Y	—	PAGE 44	75090
		REF.		W737607				POUR/SPOUT BELLOWS ASSY	—	PAGE 50	75091
37	1		1	D183595	25	—	25	MELTER SUPPORT MODIF. SH-1	—	BY FIELD	75084
		REF.			26	—	26	D183596 SH-2	—	"	"
	1	1	2	BPF. 214128				BODY FLG. O-RING	4995W	FLUORO.	
		REF.		BPF. 212902-9610				MELTER TOP HEAD	—	EXIST.	
		REF.		D178813	0			SHIM	—	EXIST.	
		REF.		D178861	0			BEARING GUIDE	—	"	
		REF.		D178860-A	0			BEARING MODIFICATIONS	—	"	
36	1		1	D187700-A	6	—	6	ANTI-ROTATION RESTRAINT	5803W	TOLEDO	75092
36	1		1	D187700-C	6	—	6	CANISTER STOP PLATE	7354W	HARD FACE WELD	"

ISSUED COMPLETELY
REVISED 12/14/84
ADDED T.L.S. 4
MINOR CHGS
1-21-85

Engineering Number		
Area	Unit	Item
4510		
4510A		

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE		
ENGINEERING DEPARTMENT		
PARTS LIST	2187	PAGE 3

MACHINE SCALE GLASS MELTER

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spere	Total		On Dwg.	To Vend	To Fld.				
35					W732075	16	16	16	REFRACTORY ASS'Y (INSTALLATION IN SHELL)	5803W	TOLEDO	75094
						0	0	0	W744809 SHT. 2			
		REF			D183228	8			REFRACTORY (MONOFRAX-K3)	—	PAGE-6	
		REF			D183231				INSULATION (FIBERFRAX)	—	PAGE-9	
		REF.			D183230				INSULATION (ZIRMUL)	—	PAGE-12	
36	1			1	D183232-A	6	6	6	REFRACTORY (MULLFRAX)	5081W	CARBO-RUNDUM	75094
36	1			1	D18504B-A	0	0	0	DUMMY HEATER	4787W	NOOTER	75094

ISSUED

COMPLETELY
REVISED 12/14/84ADDED T.L.S. &
MINOR CHGS
1-21-85

MACHINE

SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
9510C

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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PROJECT 954234

PAGE 4

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W733167	1	0	1	REFRACTORY GAGG FIXT. ASSY B/M ITEMS 1 THRU 15	AXC 4787W	NOOTER	75094
36	1			1	D183699A	0	0		POST			
	1			1	C				CENTER			
	1			1	E				SPACER			
	1			1	F				TRAMMEL ARM			
	2			2	G				" ROD			
	1			1	H				" SCRIBE			
	1			1	J				ADAPTER			
	1			1	M				HEAD			
	1			1	D183772 B	0	0	0	NUT			
	1			1	C				SPANNER WRENCH			
	1			1	D183912 A	0	0	0	FIXTURE BASE			
	1			1	B				LOCATING TEMPLATE			
	1			1	C				" JIG			
	1			1	D183923-A	0	0	0	RISER GAGE			
	1			1	B				SUPPORT			
	1			1	C				INSERT			

ISSUED COMPLETELY
REVISED 12/14/84 ADDED T.L.S. & MINOR CHGS
1-21-95

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
4510C

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Per Assy	Per Mech	Spare	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W737838	0	0	0	REFRACTORY WIRE-CUTTING #GRINDING FIXTURE INCL. B/M ITEMS 1 THRU 10 (SEE BPF #737838 FOR LATEST DESIGN)	4787W	NOOTER	75094
36	1			1	D185983-A	0	0	0	GAUGE BAR			
	1			1	-B	-			RETAINING BRACKET			
	2			2	-C	-			SUPPORT			
	3			3	-D	-			HOLD DOWN STRUT			
	2			2	-E	-			GAUGE BAR SUPPORT			
	11			11	-F	-			STEM			
36	1			1	D185893-A	0	0	0	FRAME			

ISSUED COMPLETELY
REVISED 12/14/84 ADDED T.L.S
MINOR CHGS
1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
4510C

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT

9S4234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare Total		On Dwg.	To Vend.	To Fld.				
								INSULATION (FIBERFRAX)			
								BOTTOM HEAD FIBERFRAX	-	PAGE-10	
								FORMING & TRIMMING			
								FIXTURE ASSY'S			
								KRL FIBERFRAX FORM'G			
								Φ TRIMMING FIXT. ASS'Y	-	PAGE-11	
36	1		1	D183231-A	9	9	9	BOTTOM HEAD LINER	5053W	METALLICS	75094
	1		1	-B	-			KNUCKLE RADIUS LINER			
	1		1	-C	-			RISER SLEEVE			
	1		1	-D	-			" "			
36	1		1	D183233-A	6	6	6	SLEEVE			
	1		1	-B	-			"			
	1		1	-C	-			"			
	1		1	-D	-			COLLAR			
	1		1	-E	-			SLEEVE			

ISSUED COMPLETELY
REVISED 12/14/84
MINOR CHGS
1-21-85

MACHINE

SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510C

E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST

2187

PAGE

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

[illegible]

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L.S & MINOR CHGS
1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510C		

DUPONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2187

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W733446	1	1	1	ZIRMUL GAGING AND GRINDING FIXTURE ASS'Y INCLD B/M ITEMS 1 THRU 12	4787W	NOOTER	75094
36	1			1	D183699B	0	0		POST			
	1			1	-C				CENTER			
	1			1	-D				HEAD			
	1			1	-E				SPACER			
	2			2	-G				TRAMMEL ARM			
	1			1	-H				" SCRIBE			
	1			1	-K				" ROD			
	1			1	D183772-A	0	0	0	CLAMP PLATE			
	1			1	-B				NUT			
	1			1	-C				SPANNER WRENCH			
	1			1	D183868-A	0	0	0	BASE			
	1			1	-B				DUMMY BLOCK			
	1			1	D183869-A	0	0	0	TEMPLATE SUPPORT ARM			
	1			1	-B				SUPPORT ARM POST			
	1			1	-C				CONTOUR TEMPLATE			
	1			1	-D				FLATNESS TEMPLATE			

ISSUED COMPLETELY
REVISED 12/14/84
 MACHINE SCALE GLASS MELTER

ADDED T.L.S.4
 MINOR CHGS
 1-21-85

Engineering Number		
Area	Unit	Item
G510C

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT JAVANNAH RIVER

PROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spares	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W730016	22	-	22	MELTER ASSY. SHT. 7	—	BY FIELD	75085
									LID HEATER - RELATED			
									B/M ITEMS IDENTIFIED			
									ON W729699			
35		REF			W730017	13	-	13	MELTER ASSY SHT. 8		BY FIELD	75085
35		REF			W733735				LID HEATER ASSY		PAGE 16	
36	8			8	D178814C	18	18	18	ISOLATOR	5299W	COORS	75089
36	8			8	D178815A	6	6	6	WASHER	5803W	TOLEDO	
36	16			16	D178908M	13	-	13	GASKET	—	BY FIELD	
36	2			2	D179011B	6	-	6	"	—	"	75086
36	4			4	" F	"		"	"	—	"	
36	8			8	" G	"		"	"	—	"	
36	4			4	" H	"		"	"	—	"	
36	1			1	D179015A	3	3	3	JUMPER BOX	5803W	TOLEDO	
36	1			1	" B	"			MOUNTING PLATE	"	"	
36	1			1	" C	"			COVER	"	"	

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MACHINE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510D

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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[illegible]

PLANT

PROJECT

[illegible]

ISSUED

MACHINE

Engineering Number		
Area	Unit	Item
G510D

E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2187

617 0000 110 71 50 00

PLANT

PROJECT

[illegible]

ISSUED

MACHINE

Engineering Number		
Area	Unit	Item
G510D

E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2187

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SAVANNAH RIVER

PROJECT

954234

[illegible]

ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L.S. MINOR CHGS 1-21-85
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ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L.S. MINOR CHGS 1-21-85
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MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
6510E

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

ENGINEERING DEPARTMENT

PARTS LIST 2187

MACHINE

SCALE GLASS MELTER

PARTS LIST

2187

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. Type	Per Assy	Per Mech	Spare	Total	Dwg. No.	Last Revision			Drawing Description	Order No.	Issues	Transmitted Letter
						On To	By To	Fi. To				
35	1			1	W730932	2	-	2	FEED TUBE ASSY (NOZZ A)	-	BY SRL	75088
36	1			1	D182746-A	17	-	17	FEED TUBE		"	75088
36						4	-	4	D182788		"	
38						0	-	0	D187891		"	
36	1			1	D182539-K	23	23	23	ISOLATOR	5299W	COORS	75089
36	1			1	D182861-A	0	-	0	SUPPORT	-	BY SRL	75088

MACHINE
ISSUED
COMPLETELY
REVISED 12/14/84
MINOR CHGS
1-21-85
ADDED 7.6.5

Engineering Number	Unit	Item
9510E

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED ENGINEERING DEPARTMENT WILMINGTON, DELAWARE PARTS LIST 2187
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT

954234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
	Per Assy	Per Mech	Total		On Dwg.	To Vers	To Fil.				
35	1		1	W730005	6	-	6	MELTER ASSY. SHT. 9	AXC	BY FIELD	75085
35		REF		W729785A				MELTER ASSY SHT. 4 (SIDE ELECTRODE-LOWER)		PAGE 20	
35		REF		W729785B				MELTER ASSY SHT. 4 (SIDE ELECTRODE-UPPER)		PAGE 21	

ISSUED COMPLETELY
REVISED 12/14/84
ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
9510F		

E I DU PONT DE NE HOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2/87

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. A X C	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35	2			2	W729785A	28	-	28	SIDE ELECTRODE ASSY	—	BY FIELD	75085
									RELATED B/M ITEMS			
									IDENTIFIED ON W729699			
	REF				W739535A				LOWER ELECTRODE ASSY		PAGE 22	
36	4			8	D180485A	0	0	0	WASHER	5083W	KELLER TECH	75089
36	12			24	D180498F	5	-	5	GASKET	—	BY FIELD	
36	2			4	D180940P	4	-	4	GASKET	—	"	
36	1			2	D182539A	23	23	23	ISOLATOR	5299W	COORS	
36	4			8	" B	"			ISOLATOR	"	"	
36	4			8	" C	"			ISOLATOR	"	"	
36	1			2	D182759G	5	5	5	ISOLATOR	"	"	
36	1			2	D182815A	6	6	6	ISOLATOR	"	"	75086
36	2			4	D182816A	11	-	11	GASKET	—	BY FIELD	75089
36	1			2	" B	11	-	11	GASKET	—	"	"
36	1			2	D184749A	1	1	1	GLAND FOLLOWER	5803W	TOLEDO	75086
36	1			1	D186120A	4	4	4	CLAMP TERMINAL	"	KELLER TECH	
36	1			1	" B	"			CLAMP TERMINAL	"	"	

ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L.S # MINOR CHGS 1-21-85
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MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510F		

WILSON
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2187

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mech	Spere	Total		On Dwg.	To Vend	To Fld.				
35	2			2	W729785B	28	-	28	SIDE ELECTRODE ASSY	—	BY FIELD	75086
									RELATED B/M ITEMS			
									IDENTIFIED ON W729699			
	REF				W739535B				UPPER ELECTRODE ASSY		PAGE 23	
36	4			8	D180485A	0	0	0	WASHER	5083W	KELLER TECH	75089
36	12			24	D180498F	5	-	5	GASKET	—	BY FIELD	
36	2			4	D180940P	4	-	4	GASKET	—	"	
36	1			2	D182539A	23	23	23	ISOLATOR	5299W	COORS	
36	4			8	" B	"			ISOLATOR	"	"	
36	4			8	" C	"			ISOLATOR	"	"	
36	1			2	D182759G	5	5	5	ISOLATOR	"	"	
36	1			2	D182815A	6	6	6	ISOLATOR	"	"	75086
36	2			4	D182816A	11	-	11	GASKET	—	BY FIELD	75089
36	1			2	" B				GASKET	—	"	"
36	1			2	D184749A	1	1	1	GLAND FOLLOWER	5803W	TOLEDO	75086
36	1			1	D186120A	4	4	4	CLAMP TERMINAL	"	KELLER TECH	
36	1			1	" B				CLAMP TERMINAL	"	"	

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510F

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT JAVANNAH RIVER

PROJECT

934234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
	Per Assy	Per Mach	Spare Total		On Dwg.	To Vnd.	To Fld.				
35	2		2	W739535A	12	12	12	LOWER ELECTRODE ASSY RELATED B/M ITEMS 1 THRU 4 (ITEMS 1 THRU 3 DISCARDED BY VENDOR AFTER TEST SET-UP)	5083W	KELLER TECH	75086
36	1		2	D183282A	12	12	12	SIDE ELECTRODE LOWER SHT 2 SHT 3			
36	1		2	D182747A	9	9	9	ELECTRODE RETAINER			
36	1		2	D182776A	4	4	4	CLAMP ELECTRODE			

ISSUED COMPLETED REVISED 12/14/84 ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

ENGINEERING DEPARTMENT

PARTS LIST

2187

Engineering Number		
Area	Unit	Item
G510F		

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. No.	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Assy	Mech	Store	Total		On Dwg.	To Vend	To Fld.				
35	2			2	W739535B	12	12	12	UPPER ELECTRODE ASSY	5083W	KELLER TECH	75086
									RELATED B/M ITEMS 1 THRU 4			
									(ITEMS 1 THRU 3 DISCARDED			
									BY VENDOR AFTER TEST			
									SET-UP)			
36	1			2	D183282B	12	12	12	SIDE ELECTRODE UPPER			
						8	8	8	D183283B	SHT. 2		
						24	24	24	D182560	SHT. 3		
36	1			2	D182747A	9	9	9	ELECTRODE RETAINER			
36	1			2	D182776A	4	4	4	CLAMP ELECTRODE			

ISSUED COMPLETELY REVISED 12/14/84

MACHINE SCALE GLASS-METER

ADDED T.L.S. &
MINOR CHGS
1-21-85

Engineering Number		
Area	Unit	Item
G510F

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spars	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W732726	0		0	RISER/POUR SPOUT ASSY INCL. B/M ITEMS 1 THRU 4	6276W AXC	BY FIELD	75087
35			REF		W744810	0			RISER/POUR SPOUT HTR ASSY	6276W	PAGE 26	
35			REF		W746794	0			RISER COVER & HTR. LEAD ISOL. ASSY SHT. 1	6276W	PAGE 31	
36	2			2	D178814-N	18	18	18	ISOLATOR	5299W	COORS PORCELAIN	75089
36	8			8	-P-				"			
36	8			8	-R-				"			
36	2			2	-S-				"			
36	8			8	D180941-C	0	0	0	RETAINING WASHER	4787W	NOOTER CORP.	
36	4			4	D182759-F	5	5	5	ISOLATOR	5299W	COORS PORCELAIN	

ISSUED COMPLETELY REVIS 12/14/84 ADDED T.L.S & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
65106

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
36	8			8	D182816-C	11	-	11	GASKET	—	BY FIELD	75089
36	1			1	D183233-D	6	6	6	COLLAR	5053W	METALLIC	75087
36	1			1	D183372-A	17	17	17	ADAPTER	6276W	KELLER TECH	75089
36	4			4	-E	-			RETAINING PLATE	4787W	NOOTER CORP.	
36	1			1	D183593-A	10	-	10	GASKET	—	BY FIELD	75089
36	1			1	-B	-			"	—	"	
36	1			1	D186817-D	0	0	0	SLEEVE (POUR SPOUT)	7721W	ZIRCAR PROD.	75087
36	1			1	-E	-			" " "	"	"	
36	16			16	D187605-D	0	-	0	GASKET	—	BY FIELD	75089

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MACHINE SCALE GLASS MELTER

ADDED T.L.S. &
MINOR CHGS
1-21-85

Engineering Number		
Area	Unit	Item
95109

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT	
PARTS LIST	2187

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
36	1			1	D186817-A	0	0	0	SLEEVE	7132W	ZIRCAR PROD.	75087
-	1			1	-B	-			SLEEVE			
-	1			1	-C	-			HEATER INSULATOR			
36	1			1	D189480	0	0	0	THROAT ISOLATOR	5299W	COORS PORCELAIN	
36	1			1	D187644-A	0	0	0	RISER STRIP HEATER	6276W	KELLER TECH	
36	1			1	D187648-A	7	7	7	RISER OUTER ISOLATOR	5299W	COORS PORCELAIN	
-	3			3	-B	-			" " "			
-	1			1	-C	-			" " "			
-	1			1	-D	-			" " "			
-	18			18	-E	-			SPACER			
-	28			28	-F	-			"			
-	14			14	-G	-			"			

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510G

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
36	1			1	D187649-A	4	4	4	RISER INNER ISOLATOR	5299W	COORS PORCELAIN	75087
-	2			2	-B	-			" " "			
-	1			1	-C	-			" " "			
-	1			1	-D	-			" " "			
-	1			1	-E	-			" " "			
36	1			1	D187650-A	8	8	8	POUR SPOUT INNER ISOLATOR			
-	4			4	-B	-			" " " "			
-	3			3	-C	-			" " OUTER "			
-	1			1	-D	-			" " " "			
-	1			1	-E	-			" " " "			
36	1			1	D187833-A	0	0	0	POUR SPOUT STRIP HEATER	6276W	KELLER TECH	
36	1			1	D187834-A	8	8	8	HEATER ISOLATOR	5299W	COORS PORCELAIN	
	2			2	-B	-			SLEEVE			
	2			2	-D	-			ISOLATOR			
	1			1	-E	-			RING			

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
45104

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT _____

PROJECT _____

[illegible]

ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L'S 1/21/85	
MACHINE	SCALE GLASS MELTER		

Engineering Number		
Area	Unit	Item
95109		

DU PONT
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST _____

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MACHINE DRAWING AND PARTS LIST

PROJECT 954234

SAVANNAH RIVER
PLANT

[illegible]

ISSUED	COMPLETELY	REVISED 12/11
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ADDED T.L.S. &
MINOR CHGS
1-21-85

1/14/84

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
5104		

WILSON
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

PARTS LIST

PAGE

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
	Per Assy	Per Mech	Spare Total		On Dwg.	To Vend.	To Fld.				
35	1		1	W746794	0	0	0	RISER COVER & HTR. LEADS 150L. ASSY SHT. 1	6276W	KELLER TECH	75087
35			REF		0	0	0	W745965 SHT. 2			
36	10		10	D178814-C	18	18	18	ISOLATOR	5299W	COORS PORCELAIN	75089
36	10		10	-E	-			"			
36	3		3	-F	-			"			
36	20		20	D180940-C	4	4	4	ISOLATOR	5299W	COORS PORCELAIN	75089
36	2		2	-Q	-			"			
36	1		1	-R	-			"			
36	10		10	D180941-A	0	0	0	RETAINING WASHER	6276W	KELLER TECH	75089

ISSUED COMPLETELY
 REVISED 12/14/84
 MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
95104

 E. I. du Pont de Nemours & Company
 Incorporated
 Wilmington, Delaware
 ENGINEERING DEPARTMENT
 PARTS LIST 2187

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
36	1			1	D182539-S	23	23	23	ISOLATOR	5299W	COORS PORCELAIN	75089
-	1			1	-AA	-			"			
-	1			1	-AB	-			"			
36	1			1	D183372-B	17	17	17	COVER PLATE	6276W	KELLER TECH	75089
36	3			3	D187831-A	0	0	0	THREADED CLAMP	6276W	KELLER TECH	75087
-	3			3	-B	-			FLANGE			
-	3			3	-C	-			CLAMP			
-	3			3	-D	-			PACKING FOLLOWER			
36	2			2	D187832-A	0	0	0	THREADED CLAMP	6276W	KELLER TECH	
-	2			2	-B	-			FLANGE			
-	2			2	-C	-			CLAMP			
-	2			2	-D	-			PACKING FOLLOWER			

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510G

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
36	1			1	D187834-C	8	8	8	LEAD ISOLATOR	5299W	COORS PORCELAIN	75087
36	1			1	D187835-D	0	0	0	HOLDER BAR	6276W	KELLER TECH	
-	1			1	-E	-			ISOLATOR HOLDER	↓	↓	
-	1			1	-F	-			ISOLATOR RETAINER	↓	↓	
36	3			3	D187866-A	0	0	0	GASKET	6276W	KELLER TECH	
-	2			2	-B	-			"	"	"	↓

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L.S 4 MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
95106

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. Type	No. Places	No. Places			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
		Per Assy	Per Mech	Spares		On To	Dwg. To	Verd. To				
35 1	1				W729910	13	-	13	MELTER ASSY SHT. 5	-	BY FIELD	75085
									(SECTION T-T - NOZZ-F)			
									RELATED B/M ITEMS			
									IDENTIFIED ON W729699			
35	REF				W730788-B 0				THERMOWELL ASSY		PAGE 35	
									(IN NOZZ F-MELT AREA)			
36 1					1 D178814-A	18	18	18	ISOLATOR	5299W	COORS	75089
36 8					8				" -C-		"	
36 8					8				" -D-		"	
36 8					8				ISOLATOR		"	
36 8					8				ISOLATOR		"	
36 8					8				WASHER	-	BY FIELD	
36 1					1 D178908-A	13	-	13	GASKET	-	"	
36 1					1				GASKET	-	"	
36 40					40				" -M-	-	"	
									GASKET

 E. I. du Pont de Nemours & Company
 LINCOLN, DELAWARE
 ENGINEERING DEPARTMENT
 2187
 PARTS LIST

Engineering Number	Area	Unit	Item

COMPLETELY
 REVISED 12/14/84
 MINOR CHGS
 1-21-85
 SCALE GLASS MELTER
 6510H
 MACHINE
 ISSUED

PROJECT 954234

ISSUED COMPLETELY REVISSED 12/14/84 ADDED T.L.S. & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2187

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W729910	13	-	13	MELTER ASSY SHT. 5 (SECTION T-T-NOZZ-H) RELATED B/M ITEMS IDENTIFIED ON W729699	—	BY FIELD	75085
35		REF			W730788-A	0			THERMOWELL ASSY (VAPOR AREA)		PAGE 37	
36	1			1	D178814-A	18	18	18	ISOLATOR	5299W	COORS	75089
36	8			8	-C-				ISOLATOR	"	"	
36	8			8	-D-				ISOLATOR	"	"	
36	8			8	D178815-A	6	-	6	WASHER	—	BY FIELD	
36	1			1	D178908-A	13	-	13	GASKET	—	"	
36	1			1	-B-				GASKET	—	"	
36	40			40	-M-				GASKET	—	"	

ISSUED COMPLETELY REVISED 12/14/84
 MACHINE SCALE GLASS MELTER

ADDED T.L. S &
 MINOR CHGS
 1-21-85

Engineering Number		
Area	Unit	Item
G510K

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mech	Spere	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W730788-A	0	-	0	THERMOWELL ASSY (NOZZLE H - VAPOR)	-	BY SRL	75088
									B/M ITEMS 1 THRU 3			
36	1			1	D178908-K	13	-	13	GASKET	-	BY SRL	75089
36	1			1	D182539-H	23	23	23	ISOLATOR	5299W	COORS	"
36	1			1	D182545-A	4	-	4	COVER	-	BY SRL	75088
36	1			1	D182548-B	0	-	0	SUPPORT	-	"	
36	1			1	D182741-A	6	-	6	THERMOWELL	-	"	
36	1			1	D182863-A	0	-	0	SPACER	-	"	

ISSUED COMPLETELY
REVISED 12/14/84
 MACHINE SCALE GLASS MELTER

ADDED T.L.S. &
 MINOR CHGS
 1-21-85

Engineering Number		
Area	Unit	Item

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT	
PARTS LIST	2187

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spere	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W729910	13	—	13	MELTER ASSY SHT. 5 (SECTION N-N-NOZZ-G) RELATED B/M ITEMS IDENTIFIED ON W729699	—	BY FIELD	75085
35		REF			W730434-A				THERMOWELL ASSY (MELT AREA)		PAGE 39	
36	1			1	D178814-A	18	18	18	ISOLATOR	5299W	COORS	75089
36	8			8	-C	—			ISOLATOR	"	"	
36	8			8	-D	—			ISOLATOR	"	"	
36	8			8	D178815-A	6	—	6	WASHER	—	BY FIELD	
36	1			1	D178908-A	13	—	13	GASKET	—	"	
36	1			1	-B	—			GASKET	—	"	
36	40			40	-M	—			GASKET	—	"	
36	1			1	D182539-N	23	23	23	ISOLATOR	5299W	COORS	

ISSUED COMPLETELY
 MACHINE SCALE GLASS MELTER

ADDED T.L.S. &
 MINOR CHGS
 1-21-85

Engineering Number		
Area	Unit	Item
G510J

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

PAC 38

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 954234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spars	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W729909	14	-	14	MELTER ASS'Y SHT-6 (SECT. S-S ... NOZZ. D)	-	BY FIELD	75085
	REF				W730027				LEVEL DIP TUBE ASS'Y		PAGE 41	
36	1			1	D178814-B	18	18	18	ISOLATOR	5299W	COORS	75089
36	8			8	-C	-			" "	"	"	
36	8			8	-D	-			" "	"	"	
36	8			8	D178815-A	6	-	6	WASHER	-	BY FIELD	
36	1			1	D178908-B	13	-	13	GASKET	-	"	
36	1			1	-C	-			" "	-	"	
36	40			40	-M	-			" "	-	"	

ISSUED COMPLETELY
REVISED 12/14/84
 MACHINE SCALE GLASS MELTER

ADDED T.L.S. &
 MINOR CHGS
 1-21-85

Engineering Number		
Area	Unit	Item
9510L

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT
PARTS LIST <u>2187</u>

PAGE

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MACHINE DRAWING AND PARTS LIST

PLANT JAVANNAH RIVER

PROJECT 954234

[illegible]

ISSUED COMPLETELY REVISED 12/14/84 ADDED T.L. 5 & MINOR CHGS 1-21-85

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510 L		

DU PONT
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2187

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT

954234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Spare	Total		On Dwg.	To Vend	To Fld.				
35	1		1	D178814-P	18	18	18	MELTER ASS'Y SH. 10 (SHELL SIDE THERMOWELLS) RELATED B/M IDENTIFIED ON W729699	--	BY FIELD	75085
36	8		8	-R				ISOLATOR	5299W	COORS	75089
36	8		8	-BB				ISOLATOR	"	"	
36	4		4					ISOLATOR	"	"	
36	16		16	D180940-N	4	-	4	GASKET	--	BY FIELD	
36	8		8	D180941-C	0	0	0	RETAINING WASHER	4787W	NOOTER CORP.	
36	4		4	D182759-F	5	5	5	ISOLATOR	5299W	COORS	
36	8		8	D182816-C	11	-	11	GASKET	--	BY FIELD	
36	4		4	D183372-E	17	17	17	RETAINING PLATE (BPF 213987-SHT. 23)	4787W	NOOTER CORP.	

ISSUED	COMPLETED	ADDED T.L.S. & MINOR CHGS 1-21-85
	REVISED 12/14/84	

MACHINE GLASS MELTER (SCALE)

Engineering Number		
Area	Unit	Item
5510M

**E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE**

**WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT**

PARTS LIST

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT OS4234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spere	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W735310	7	-	7	MELTER ASS'Y SH. 10 (BOTTOM HEAD THERMOWELL) RELATED B/M IDENTIFIED ON W729699	—	BY FIELD	75085
36	8			8	D178814-P	18	18	18	ISOLATOR (SLEEVE)	5299W	COORS	75089
36	8			8	-R	-			ISOLATOR (WASHER)	"	"	
36	4			4	-BB	-			ISOLATOR (SLEEVE)	"	"	
36	16			16	D180940-N	4	-	4	GASKET	—	BY FIELD	
36	8			8	D180941-C	0	0	0	RETAINING WASHER	4787W	NOOTER CORP.	
36	4			4	D182759-F	5	5	5	ISOLATOR	5299W	COORS	
36	8			8	D182816-C	11	-	11	GASKET	—	BY FIELD	
36	4			4	D183372-E	17	17	17	RETAINING PLATE (BPF 213987 - SHT. 23)	4787W	NOOTER CORP.	

ISSUED COMPLETELY
REVISED 12/14/84

MACHINE GLASS MELTER / SCALE

ADDED T.L.S. &
MINOR CHGS
1-21-85

Engineering Number		
Area	Unit	Item
G510M

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 9S4234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mech	Spare	Total		On Dwg.	To Vend	To Fld.				
35	1			1	W743477	1	1	1	DUMP VALVE ASSEMBLY INCL. B/M ITEMS 1 THRU 9		BY FIELD	75090
					NOTE: DUMP VALVE ASSEMBLY IS NOT PART OF PROJECT 9S4234. DESIGN & PROCUREMENT COVERED BY WR861885							
		REF.			W743406	0			DUMP VALVE HEATER ASSY SHI		PAGE 47	
37	4			4	D178814-C	18	18	18	ISOLATOR	5299W	COORS	75089
-	4			4	-E	-			"	"	"	
-	1			1	-L	-			"	"	"	
-	14			14	-R	-			"	"	"	
-	1			1	-AA	-			"	"	"	
36	4			4	D180941-A	0	0	0	RETAINING WASHER	6563W	KELLER TECH	
-	8			8	-C	-			"	"	"	

ISSUED COMPLETELY REVISED 12/14/84
 MACHINE SCALE GLASS MELTER

ADDED T.L.S. &
 MINOR CHGS
 1-21-85

Engineering Number		
Area	Unit	Item
6510M

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2187</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 9S4234

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mech	Spare	Total		On Dwg.	To Vend.	To Fld.				
36	1			1	D182816-D	11	11	11	GASKET	6563W	KELLER TECH	75089
36	2			2	D183593-C	10	10	10	GASKET	6563W	KELLER TECH	75089
36	2			2	D186481-F	9	9	9	SLEEVE (ISOLATOR)	5299W	COORS	75090
-	6			6	-G	-			" "			
-	2			2	K	-			" "			
-	2			2	-L	-			" "			
-	2			2	-M	-			" "			
36	2			2	D186824-A	1	1	1	THERMOCOUPLE SUPPORT	6563W	KELLER TECH	75090
-	2			2	-B	-			" "	"	"	
-	2			2	-C	-			" "	"	"	
36	28			28	D187605-D	0	0	0	GASKET	5053W	METALLICS	75089
-	8			8	-E	-			"			

ISSUED COMPLETELY REvised 12/14/84 ADDED T.I.L.S & MINOR CHGS 1-21-85
 MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
6510N

E I du Pont de Nemours & Company
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2187

54234

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PLANT SAVANNAH RIVER

PROJECT

954234

Dwg. Type	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
	Per Assy	Per Mech	Total		On Dwg.	To Vend	To Fld.				
35	1		1	W743406	0	0	0	DUMP VALVE HEATER ASSY	6563W	KELLER TECH	75090
35					0	0	0	W743472 SHRT2			
								B/M ITEMS 1 & 2			
36	1		1	D181073-A	6	6	6	RING (ISOLATOR)	5299W	COORS	
7			7	-B	-			SLEEVE			
1			1	-C	-			"			
1			1	-D	-			"			
1			1	-E	-			"			
1			1	-F	-			"			
1			1	-G	-			RING			
1			1	-H	-			ISOLATOR			
36	1		1	D184772-A	1	1	1	HALF END CAP	6563W	KELLER TECH	
1			1	-B	-			LEFT QUARTER END CAP			
1			1	-C	-			RIGHT " "			
1			1	-D	-			SLOT ENCLOSURE			
1			1	-E	-			LOCATING ROD			

COMPLETELY

ISSUED REVISED 12/14/84

ADDED T.L.S. 4
MILWAUKEE CHGS
1-21-85

Engineering Number

Area Unit Item

9510M

E I du Pont de Nemours & Company
INCORPORATED
WILMINGTON, DELAWARE

ENGINEERING DEPARTMENT

PARTS LIST

2187

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MACHINE SCALE GLASS MELTER

PAGE

PLANT SAVANNAH RIVER

PROJECT

954234

Dwg. Title	No. Pieces			Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmitted Letter
	Per Assy	Per Mech	Spares Total		On Dwg.	To Vend.	To Fld.				
36	1		1	D186820-A	0	0	0	STEM	6563W	KELLER TECH	75090
-	1		1	-B-	-			PROBE			
-	1		1	-C-	-			GLAND WASHER			
-	1		1	-D-	-			PACKING GLAND			
36	1		1	D186821-A	0	0	0	JACKET			
36	1		1	D186823-A	0	0	0	HEATER ZONE 1			
-	1		1	-B-	-			" ZONE 2			
36	1		1	D187356-A	1	1	1	SLEEVE	7132W	ZIRCAR PROD	
-	1		1	-B-	-			"			
-	1		1	-C-	-			END CAP INSULATOR			
-	2		2	-D-	-			SIDE INSULATOR			
36	1		1	D187372-A	0	0	0	HEATER ZONE 3	6563W	KELLER TECH	
36	1		1	D187605-A	0	0	0	GASKET	5053W	METALLICS	75089
-	1		1	-B-	-			"			
-	1		1	-C-	-			"			

COMPLETELY

ADDED T.L.S. & MINOR CHGS

ISSUED REVISED 12/14/84

Engineering Number

Area Unit Item

G510M

MACHINE SCALE GLASS MELTER E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

ENGINEERING DEPARTMENT

PARTS LIST 2187

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PROJECT 954234

NOTE:	POUR	SPOUT	BELLOWS	ASSY	NOT	PART	OF	PROJECT
	9542	34.	DESIGN	AND	PROCUREMENT	COVERED		
	BY	W.R.	861884					

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MACHINE DRAWING AND PARTS LIST

PROJECT 954234

PIANT SAVANNAH RIVER

[illegible]

COMPLETED
REVISED 12-14/84

ISSUED

MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510 P

**E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT**

PARTS LIST

2187

PAGE

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

[illegible]

ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L.S. & MINOR CHGS 1-21-85
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MACHINE SCALE GLASS MELTER

Engineering Number		
Area	Unit	Item
G510	101

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST 2187

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 954234

[illegible]

ISSUED	COMPLETELY REVISED 12/14/84	ADDED T.L.S & MINOR CHGS 1-21-85
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MACHINE GLASS MELTER SCALE

Engineering Number		
Area	Unit	Item
G510	101	

DUPONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

PARTS LIST _____

PAGE 5

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spars	Total		On Dwg.	To Vend	To Fld.				
									<u>DA \$350 - MELTER</u>			
									<u>GENERAL INDEX</u>			
									<u>I - FIELD AND VENDOR RESPONSIBILITY</u>			
									MELTER COMPONENT		SECTION B	
									INSTALLATION			
									• FIELD INSTALLATION DWGS		PG. B1	
									AND MISC. SHELL PARTS			
									• ELECTRODES		PG. B6	
									• DOME HEATERS		PG. B10	
									• RISER/POUR SPOUT		PG. B12	
									• ANCHOR FLGS & ALIGN. FIXT.		PG. B16	
									• DRAIN VALVE		PG. B28	
									• INSPECTION/ASSY FIXTURE		PG. B30	
									<u>II - VENDOR RESPONSIBILITY</u>			
									MELTER SHELL		SECTION E	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PAGE 1

MACHINE DRAWING AND PARTS LIST

PLANT SAYANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mech	Spare	Total		On Dwg.	To Vend	To Fld.				
									MELTER REFRACTORY		SECTION F	
									MELTER INSULATION		SECTION G	
									FIXTURE AND GAGES		SECTION H	
									• REFRACTORY		PG. H 1	
									• INSULATION		PG. H 10	
									FEED TUBE		SECTION J	
									MELT THERMOWELLS		SECTION L	
									VAPOR T.W./COND. PROBE		SECTION M	
									LEVEL DIP TUBE		SECTION N	
									T.V. CAMERA		SECTION P	
									OFF-GAS FILM COOLERS		SECTION Q	

ISSUED 8/26/88, 1/31/89

MACHIN'

● WPF MELTER

Engineering Number		
Area	Unit	Item
S35

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

● 2

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350		

DU PONT
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2308

PAGE 3

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
34c	1	1	-	2	W819165	2	-	2	MELTER COMPONENT INSTALLATION- GEN. INDEX <u>SECTION "B" INDEX</u> • FIELD INSTALLATION DWGS AND MISC. SHELL PARTS • ELECTRODES • DOME HEATERS • RISER/POUR SPOUT HTR • ANCHOR FLGS & ALIGN. FIXT. • DRAIN VALVE • INSPECT'N/ASSEMBLY FIXTURE		BY FIELD	
											PAGES B1-5	
											PAGES B6-9	
											PAGES B10-11	
											PAGES B12-15	
											PAGES B16-27	
											PAGE B28-29	
											PAGES B30-32	
34	-	-	-	-	SPEC 9067	3		3	INSTALLATION PROCEDURES		BY FIELD	
35	-	-	-	-	W743909	46		46	ELECTRODE ASSY- UPPER & LOWER		"	
							34		VENDOR PORTION		PAGE B6	
35	-	-	-	-	W743911	1		1	SECT. THRU DOME HEATERS		BY FIELD	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PA

B i

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	-	W748706	47	38	47	RISER/POUR SPOUT HTR - SH.1		BY FIELD	
35	-	-	-	-	W748707	43	40	43	" " " " - SH.2		"	
35	-	-	-	-	W748708	15		15	" " " " - SH.3		"	
							10		VENDOR PORTION		PAGES B12-15	
35	-	-	-	-	W804860	11		11	SIDE ELEVATION - MELTER		BY FIELD	
	1	1		2			0		B/M ITEMS 1 THRU 4	6853	KELLER TECH	
35	-	-	-	-	W804887	3	0	3	SECTION THRU ELECTRODES		BY FIELD	
35	-	-	-	-	W805066	1	-	1	PLAN VIEW - MELTER ASSY		"	
35	-	-	-	-	W805377	3	-	3	CONNECTION SCHED. - PRIMARY (SHELL)		"	
35	-	-	-	-	W805378	4	-	4	" " - AUX. EQ		"	
35	-	-	-	-	W807736	18	-	18	ANCHOR FLG MTG ASSY - SH.1		"	
35	-	-	-	-	W807737	16	-	16	" " " " - SH.2		"	
									VENDOR PORTION		PAGES B16-19	
35	-	-	-	-	W807889	24	-	24	DRAIN VALVE ASSY - SH.3		BY FIELD	
									VENDOR PORTION		PAGES B28-29	
35	-	-	-	-	W809440	8	-	8	DRAIN VALVE ASSY - SH.7		BY FIELD	
35	-	-	-	-	W809826	7	-	7	" " " " - SH.6		"	
35	-	-	-	-	W810639	8	-	8	" " " " - SH.4		"	
35	-	-	-	-	W810641	10	-	10	" " " " - SH.2		"	

ISSUED 8/24/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350B

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter		
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.						
	No.1	No.2												
35	-	-	-	-	W810642	14	-	14	DRAIN VALVE ASSY - SH.1		BY FIELD			
	1	1	-	2			-		B/M ITEMS 1 THRU 5	6853	KELLER TECH.			
35	-	-	-	-	W812311	6	-	6	DRAIN VALVE ASSY - SH.5		BY FIELD			
35	-	-	-	-	W812348	2	-	2	" " " - T/C's		"			
35	-	-	-	-	W812971	6	-	6	DOME HEATER ASSY		"			
							1		VENDOR PORTION		PAGES B10-11			
35	-	-	-	-	W812984	64	-	64	AUX. EQ. THERMOCOUPLE INFO		BY FIELD			
35	-	-	-	-	W823832		-	0	ANCH. FLG. ALIGN. FIXT. ASSY - SH.1		"			
							0		VENDOR PORTION		PAGES B20-27			
35	-	-	-	-	W823833	2	-	2	ANCH. FLG. ALIGN. FIXT. ASSY - SH.2		BY FIELD			
35	-	-	-	-	W824062	4	-	4	" " " " " - SH.3		"			
35	-	-	-	-	W824063	5	-	5	" " " " " - SH.4		"			
35	-	-	-	-	W824064	5	-	5	" " " " " - SH.5		"			
35	-	-	-	-	W824065	5	-	5	" " " " " - SH.6		"			
35	-	-	-	-	W826534	3	-	3	COMPONENT INSPEC/ASSY FIXTURE		"			
							1		VENDOR PORTION		PAGES B30-32			
					MISC. PARTS - SHELL T/C's									
36	4	4	-	8	D187164-D	13	13	13	GASKET	6853	KELLER TECH			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951441

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
37	1			1	D 179385	0	0	0	MOUNTING PLATE	1799	KELLER	78718
37	1				D179274-A	7	7	7	INSULATOR	1647	KELLER	78718 01628
/	1				" -D				"	"	"	
35		1	1	2	W710760-A	6	2	6	RISER HEATER ASSEM	1647	KELLER	01628 4750718718 38713
37	1		1	2	D179046-A	0	0	0	INSULATOR	1647	"	01628
37	1		1	2	D179047-A	0	0	0	RETAINING RING	1799	WEST EN	01628
37	1		1	2	D179078-A	26	24	26	HEATER *	1517 1647	HUNT. ALLOY KELLER	01636 01628 78748
									INSULATORS FOLLOWING			
									ARE ASSEMBLED WITH HTR			
37	5		5	10	D179054-A	2	2	2	INSULATOR *	1647	KELLER	01628
/	17		17	34	-B				" *	"		
/	8		8	16	-C				" *	"		
/	1		1	2	-D				" *	"		
/	1		1	2	-E				" *	"		
37	2			2	D178981-M	18	18	18	GASKET	1568 REF 1785	CARBORUND	01627
/	2			2	-N				"	"	"	

ISSUED 3-26-79 4-11-79
 MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
5	100	-

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT
PARTS LIST <u>2007</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9 S1941

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Per Assy	Per Mach	Spare	Total		On Dwg.	To Vend	To Fld.				
55		1			W 710493	2		2	GLASS MELTER ASSY SH.5 (JUNCTION BOX)			01629 47507 78748
37	3		2	5	D 178913-A	0	0	0	INSULATOR	1652	COORS	01629
	3		2	5	-B				"	1652	"	
37	2			2	D 178914-A	1	1	1	TERMINAL POST	1799	WEST ENG.	78735 01629
	1			1	-C				" "			
	3			3	-B				NUT			
37	1			1	D 178984-A	0	0	0	JUNCTION BOX			01629
	1			1	-B				COVER (W/O VENTILATION)			
37	1			1	D 179011-A	0	0	0	GASKET			01629
	9			9	-C				"			
	4			4	-E				"			
37	2			2	D 179023-A	0	0	0	SPACER			01629
37	6		1	7	D 179030-E	16	16	16	INSULATOR	1652	COORS	01628
37	3				D 179096-A	2	2	2	TERMINAL CLAMP	1799	WEST ENG.	78718 (78735) 01629
37			1	1	D 179113-A	0	0	0	COVER (WITH VENTIL.)			01629
37	1			1	D 179186-A	0	0	0	SHIELD			01629
37	2			2	D 179188-A	0	0	0	SHIELD			01629

ISSUED 1-9-79; 3-26-79; 4-11-79MACHINE TNX MELTER

Engineering Number		
Area	Unit	Item
4510	100	-

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST 2007
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BY APPLIED IMAGE, INC.

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spars	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	2	2	-	4	W743909-A	46	34	46	ELECTRODE ASSY - LOWER	6853	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 12	"	"	
36	2	2	-	4	D187373-A	7	7	7	SIDE ELECTRODE - SH.1	"	"	
36					(D187374)	5	5	5	" " - SH.2			
36					(D187375)	1	1	1	" " - SH.3			
36	2	2	-	4	D187634-A	8	8	8	ELECTRODE RETAINER	"	"	
	2	2	-	4	-B				CLAMP	"	"	
	2	2	-	4	-C				GLAND FOLLOWER	"	"	
36	8	8	-	16	D187871-A	39	39	39	ISOLATOR	6852	WESGO *	
	8	8	-	16	-B				"	"	"	
36	2	2	-	4	D188463-A	0	0	0	ISOLATOR	"	"	
	2	2	-	4	-B				"	"	"	
	2	2	-	4	-C				"	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST 2308

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter	
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.					
	No.1	No.2											
36	4	4	-	8	D188464-A	18	16	18	GASKET	6853	KELLER TECH		
	2	2	-	4	-B				"	"	"		
	16	16	-	32	-D				"	"	"		
36	4	4	-	8	D188465-B	5	5	5	GASKET	6851	METALLICS	*	
36	2	2	-	4	D188474-A	9	8	9	ADAPTER FLANGE	6853	KELLER TECH		
	2	2	-	4	-B				PACKING FOLLOWER	"	"		
36	8	8	-	16	D188475-C	12	12	12	RETAINING WASHER	"	"		
					* SHIPPED TO KELLER - ALL COMPONENTS REQ'D BY FIELD TO INSTALL ELECTRODE IN MELTER SHIPPED AS A COMPLETE PACKAGE BY KELLER.								
											</		

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PAC

B 7

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	2	2	-	4	W743909-B	46	34	46	ELECTRODE ASSY- UPPER	6853	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 12	"	"	
36	2	2	-	4	D187373-B	7	7	7	SIDE ELECTRODE - SH.1	"	"	
36					(D187374)	5	5	5	" " - SH.2	"	"	
36					(D187375)	1	1	1	" " - SH.3	"	"	
36	2	2	-	4	D187634-A	8	8	8	ELECTRODE RETAINER	"	"	
	2	2	-	4	-B				CLAMP	"	"	
	2	2	-	4	-C				GLAND FOLLOWER	"	"	
36	8	8	-	16	D187871-A	39	13	39	ISOLATOR	6852	WESGO *	
	8	8	-	16	-B				"	"	"	
36	2	2	-	4	D188463-A	0	0	0	ISOLATOR	"	"	
	2	2	-	4	-B				"	"	"	
	2	2	-	4	-C				"	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No.1	No.2	Spare	Total		On Dwg.	To Vend.	To Fld.				
36	4	4	-	8	D188464-A	18	16	18	GASKET	6853	KELLER TECH	
	2	2	-	4	-B				"	"	"	
	16	16	-	32	-D				"	"	"	
36	4	4	-	8	D188465-B	5	5	5	GASKET	6851	METALLICS*	
36	2	2	-	4	D188474-A	9	8	9	ADAPTER FLANGE	6853	KELLER TECH	
	2	2	-	4	-B				PACKING FOLLOWER	"	"	
36	8	8	-	16	D188475-C	12	12	12	RETAINING WASHER	"	"	
* SHIPPED TO KELLER - ALL COMPONENTS REQ'D BY FIELD TO INSTALL ELECTRODE IN MELTER SHIPPED AS A COMPLETE PACKAGE BY KELLER.												

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1	-	2	W812971	6	1	6	DOME HEATER ASSY	6853	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 4	"	"	
36	4	4	-	8	D187602-A	40	40	40	DOME HEATER	"	"	
	4	4	-	8	-B				" "	"	"	
36	4	4	-	8	D187621-A	2	2	2	JUMPER	"	"	
36	32	32	-	64	D187871-D	39	13	39	ISOLATOR	6852	WESGO *	
	32	32	-	64	-Y				"	"	"	
36	64	64	-	128	D188464-D	18	16	18	GASKET	6853	KELLER TECH	
36	32	32	-	64	D188475-B	12	12	12	RETAINING WASHER	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350B

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	8	8	-	16	D198210-A	1	0	2	ISOLATOR	6852	WESGO *	
	8	8	-	16	-B				ISOLATOR FLANGE	"	"	
	4	4	-	8	-C				" SLEEVE	"	"	
	4	4	-	8	-D				" "	"	"	
	4	4	-	8	-E				" "	"	"	
	4	4	-	8	-F				" "	"	"	
36	8	8	-	16	D198215-A	0	0	0	RETAINER	6853	KELLER TECH	
36	16	16	-	32	D198216-A	0	0	0	GASKET	"	"	
					* SHIPPED TO KELLER- ALL COMPONENTS REQ'D BY FIELD							
					TO INSTLL. DOME HEATERS IN MELTER SHIPPED AS							
					A COMPLETE PACKAGE BY KELLER.							

ISSUED 8/26/88, 1/3/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B		

DUPONT
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2308

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D188379-B	8	3	8	ISOLATOR SLEEVE	8417	WESGO *	
	1	1	-	2	-D				ISOLATOR	"	"	
36	1	1	-	2	D188383-D	8	8	8	ISOLATOR HOLDER	6853	KELLER TECH	
	1	1	-	2	-E				RETAINER	"	"	
36	20	20	-	40	D188464-D	18	16	18	GASKET	"	"	
	1	1	-	2	-E				"	"	"	
36	2	2	-	4	D188465-A	5	1	5	GASKET	392	METALLICS *	
36	10	10	-	20	D188475-B	12	12	12	RETAINING WASHER	6853	KELLER TECH	
36	1	1	-	2	D188785-A	13	13	13	COVER	"	"	
36	1	1	-	2	D188787-E	18	12	18	INSULATION SLEEVE	341	ZIRCAR *	
	1	1	-	2	-F				" "	"	"	
36	1	1	-	2	D188792-A	4	1	4	COLLAR	6851	METALLICS *	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350B

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D188800-A	15	15	15	ADAPTER	6853	KELLER TECH	
	4	-	4	8	-C				FLANGE	"	"	
	1	1	-	2	-D				SHIELD	"	"	
36	2	2	-	4	D808600-A	0	0	0	RISER LEAD CLAMP	"	"	
	3	3	-	6	-B				POUR SPOUT LEAD CLAMP	"	"	
	2	2	-	4	-C				PACKING FOLLOWER	"	"	
	3	3	-	6	-D				" "	"	"	
36	1	1	-	2	D815444-A	0	0	0	T/C SUPPORT BRACKET	"	"	
36	1	1	-	2	D819502-A	1	1	1	INSULATOR	1716	ZIRCAR*	
	1	1	-	2	-B				"	"	"	
	1	1	-	2	-C				"	"	"	
36	1	1	-	2	D819588-A	0	0	0	"	"	"	
	1	1	-	2	-C				" SLEEVE	"	"	
	2	2	-	4	-E				"	"	"	
	2	2	-	4	-F				"	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	1	1	-	2	W807736	17	7	17	ANCHOR FLG MTG ASSY'- SH.1		BY FIELD	
35					(W807737)	16	15	16	" " " " - SH.2		"	
									B/M ITEMS 1 THRU 5	725	WRIGHT	
		REF.			W823832				ALIGNMENT FIXTURE ASSY		PAGE B 20	
		REF.			D186204				MELTER VESSEL TOP HEAD		PAGE E 2	
36	3	3	-	6	D187870-A	18	18	18	ANCHOR FLANGE - "C" NOZ.	725	WRIGHT	
36					(D188688)	11	11	11	2" ACME STUD			
36					(D188689)	7	7	7	2" DOWEL			
36	2	2	-	4	D187870-B	18	18	18	ANCHOR FLANGE - "B" NOZ.	"	"	
36					(D188688)	11	11	11	2" ACME STUD			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 B

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	-	2	D187870-C	18	18	18	ANCHOR FLANGE - "E" NOZ.	725	WRIGHT	
36					(D188688)	11	11	11	2" ACME STUD			
36					(D188689)	7	7	7	2" DOWEL.			
36	50	50	-	100	D187871-D	39	39	39	ISOLATOR	1489	COORS	
	14	14	-	28	- G				"	"	"	
	36	36	-	72	- Y				"	"	"	
36	4	4	-	8	D187872-A	1	1	1	ISOLATOR	"	"	
	2	2	-	4	- B				"	"	"	
36	100	100		200	D188464-D	18	16	18	GASKET	725	WRIGHT	
36	50	50		100	D188475-B	12	11	12	RETAINING WASHER	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350 B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	-	2	D188679-A	22	22	22	FD TUBE FRAME ANCHOR FLG	AXC 725	WRIGHT	
36					(D188688)	11	11	11	2" ACME STUD			
36					(D188689)	7	7	7	2" DOWEL			
36	1	1	-	2	D188679-B	22	22	22	FD TUBE FRAME ANCHOR FLG	"	"	
36					(D188688)	11	11	11	2" ACME STUD			
36					(D188689)	7	7	7	2" DOWEL			
36	2	2	-	4	D188681-A	34	34	34	FD TUBE FRAME ANCHOR FLG	"	"	
36					(D188688)	11	11	11	2" ACME STUD			
36					(D188689)	7	7	7	2" DOWEL			
36	2	2	-	4	D188694-A	33	33	33	T.V. ANCHOR FLANGE	"	"	
36					(D188688)	11	11	11	2" ACME STUD			
36					(D188689)	7	7	7	2" DOWEL			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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513 3301 115 1. 3 12

PLANT Savannah River

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350B		

DUPONT
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	-	-	-	1	D822019-A	55	55	55	POSITIONING PLATE	2057	KELLER TECH	
	-	-	-	1	-B				INDICATING BAR	"	"	
	-	-	-	1	-C				" "	"	"	
	-	-	-	1	-D				WRENCH	"	"	
	-	-	-	1	-E				GAGE BAR	"	"	
	-	-	-	1	-F				" "	"	"	
	-	-	-	1	-G				LIFTING YOKE	"	"	
	-	-	-	1	-H				GAGE BAR	"	"	
36	-	-	-	1	D822024-A	36	36	36	POSITIONING FIXTURE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter	No.1	No.2	Spare		On Dwg.	To Vend.	To Fid.				
35	-	-	-	2	W820788-A	5	5	5	CENTERING MOUNT ASSY	2057	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 6	"	"	
36	-	-	-	2	D819503-A	28	28	28	OUTER SLEEVE	"	"	
	-	-	-	2	-B				UPPER PLUG	"	"	
	-	-	-	2	-C				LOWER "	"	"	
	-	-	-	2	-D				SHAFT	"	"	
	-	-	-	12	-E				PIN	"	"	
	-	-	-	4	-F				CAM	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	1	W822027	4	4	4	TRAVERSE INDICATING ASSY	2057	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 11	"	"	
		REF.			W820788-B				CENTERING MOUNT ASSY		PAGE B 24	
		REF.			-C				" " "		PAGE B 25	
		REF.			W824056				CARRIAGE ASSY		PAGE B 26	
36	-	-	-	1	D822020-A	27	27	27	BASE PLATE	2057	KELLER TECH	
	-	-	-	1	-B				SHAFT	"	"	
	-	-	-	1	-C				BAR	"	"	
36	-	-	-	2	D823793-A	2	2	2	SHAFT SUPPORT RAIL	"	"	
	-	-	-	2	-B				END STOP	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	1	W820788-C	5	5	5	CENTERING MOUNT ASSY	2057	KELLER TECH	
									INCL. B/M ITEM 4	"	"	
36	-	-	-	3	D819503-E	28	28	28	PIN	"	"	
36	-	-	-	1	D819504-B	7	7	7	GAGE/MOUNTING FLANGE	"	"	
	-	-	-	1	-D				PLUG	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B

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MACHINE DRAWING ID PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	-	-	-	1	W824056	3	2	3	CARRIAGE ASSEMBLY	2057	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 7	"	"	
36	-	-	-	1	D822021-A	25	24	25	CARRIAGE PLATE	"	"	
	-	-	-	1	- B				STOP RETAINER	"	"	
	-	-	-	1	- C				FRICTION STOP	"	"	
	-	-	-	1	- D				SPACER BLOCK	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 B

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	1	W823831	1	0	1	ROTATING INDICATOR ASSY	2057	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 6	"	"	
36	-	-	-	1	D823779-A	28	28	28	SLEEVE	"	"	
	-	-	-	1	-B				CAP	"	"	
	-	-	-	1	-C				PLATE	"	"	
	-	-	-	1	-D				INDICATOR RETAINER	"	"	
	-	-	-	1	-E				STUD	"	"	
	-	-	-	2	-F				BAR	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350B

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
No.1	No.2											
35	1	1	-	2	W307389	24	-	24	DRAIN VALVE ASSY - SH.3	AXC	BY FIELD	
36	4	4	-	8	D187871-D	39	33	39	ISOLATOR	8823	WESGO*	
	8	8	-	16	-L				"	"	"	
	4	4	-	8	-T				"	"	"	
	4	4	-	8	-V				"	"	"	
	1	1	-	2	-X				"	"	"	
36	8	8	-	16	D188464-D	18	16	18	GASKET	6850	KELLER TECH	
	16	16	-	32	-F				"	"	"	
	1	1	-	2	-G				"	"	"	
	1	1	-	2	-K				"	"	"	
36	4	4	-	8	D188475-A	12	11	12	RETAINING WASHER	"	"	
	4	4	-	8	-B				" "	"	"	
	4	4	-	8	-D				" "	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350B

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

DWPF MELTER
MACHINE

Engineering Number		
Area	Unit	Item
\$350B		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	2	W831497	1	1	1	INSPECTION AND ASSEMBLY	6853	KELLER TECH	
									FIXTURE COMPONENTS			
									INCL. B/M ITEMS 1 THRU 5	"	"	
36	-	-	-	2	D822992-A	1	1	1	TV POSITIONING PLATE	"	"	
	-	-	-	2	-B				BUSHING	"	"	
	-	-	-	2	-C				"	"	"	
	-	-	-	2	-D				"	"	"	
36	-	-	-	2	D822996-A	1	1	1	GAGING BAR	"	"	
36	-	-	-	2	D822998-A	1	1	1	GAGE STANDARD	"	"	
	-	-	-	2	-B				" "	"	"	
	-	-	-	2	-C				" BLOCK	"	"	
	-	-	-	2	-D				" "	"	"	
	-	-	-	2	-E				SLEEVE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350 B

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No. 1	Melter No. 2	Spare	Total		On Dwg.	To Vend.	To Fld.				
35	-	-	-	2	W826535	1	1	1	INSPECTION AND ASSEMBLY	6853	KELLER TECH	
									FIXTURE ASSY			
									INCL. B/M ITEMS 1 THRU 17	"	"	
36	-	-	-	2	D822993-A	1	1	1	BASE PLATE	"	"	
36	-	-	-	4	D822994-A	1	1	1	GAGING PLATE	"	"	
	-	-	-	4	-B				HINGE PLATE	"	"	
36	-	-	-	4	D824847-A	1	1	1	BRACKET	"	"	
	-	-	-	4	-B				CLEVIS	"	"	
	-	-	-	4	-C				"			
	-	-	-	4	-D				SUPPORT BAR	"	"	
	-	-	-	4	-E				SPACER	"	"	
36	-	-	-	2	D830774-A	1	1	1	FRAME	"	"	
36	-	-	-	2	D832202-A	1	1	1	BRACE	"	"	
	-	-	-	2	-B				"	"	"	
	-	-	-	2	-C				"	"	"	
	-	-	-	2	-D				"	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No. 1	No. 2	Spare	Total		On Dwg.	To Vend.	To Fld.				
32	1	1	-	2	PV184722	12		12	MELTER VESSEL	6247	CBI	
					<u>FINAL DESIGN & FABRICATION PER</u>							
					BPF215605				MELTER #1	"	"	
					BPF216333				MELTER #2	"	"	
36	1	1	-	2	D185971	18	17	18	SHELL - SH.1	"	"	
"					(D185972)	14	13	14	" - SH.2	"	"	
"					(D185973)	12	11	12	" - SH.3	"	"	
"					(D185974)	14	13	14	" - SH.4	"	"	
"					(D185975)	26	25	26	" - SH.5	"	"	
"					(D185976)	19	18	19	" - SH.6	"	"	
"					(D185977)	16	15	16	" - SH.7	"	"	
"					(D185978)	24	23	24	" - SH.8	"	"	
"					(D185979)	12	11	12	" - SH.9	"	"	
"					(D185980)	21	20	21	" - SH.10	"	"	
"					(D185981)	16	15	16	" - SH.11	"	"	
"					(D185982)	15	14	15	" - SH.12	"	"	
"					(D186665)	7	6	7	" - SH.13	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36					(D189483)	47	46	47	SHELL - SH.14	6247	CBI	
"					(D189714)	17	16	17	" - SH.15	"	"	
"					(D198197)	15	14	15	" - SH.16	"	"	
"					(D198199)	3	2	3	" - SH.17	"	"	
"					(D198202)	2	1	2	" - SH.18	"	"	
"					(D198738)	1	0	1	" - SH.19	"	"	
36	1	1		2	D186204	23	22	23	TOP HEAD - SH.1	"	"	
"					(D186205)	9	8	9	" " - SH.2	"	"	
"					(D186206)	15	14	15	" " - SH.3	"	"	
"					(D186207)	19	18	19	" " - SH.4	"	"	
"					(D186208)	2	1	2	" " - SH.5	"	"	
"					(D186209)	49	48	49	" " - SH.6	"	"	
"					(D186826)	3	2	3	" " - SH.7	"	"	
"					(D189685)	1	0	1	" " - SH.8	"	"	
"					(D198217)	1	0	1	" " - SH.9	"	"	
35					(W834928)	0	0	0	" " - NOZZLE LOCATIONS FOR MELTER #2	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350E

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1	-	2	W737669	1	0	1	REFRACTORY ASSY - SH. 1	6854	TOLEDO ENG.	
									(REFRACTORY INSTALLATION INTO MELTER SHELL)			
35					(W736915)	6	0	6	REFRACTORY ASSY - SH. 2			
		REF.			—				TOP HEAD HANDL'G & SHIP'G FIXT.		PAGE H14	
		REF.			—				REFRACTORY GAGE & FIXTURES		PAGES H1 - 9	
		REF.			W748249				DUMMY HTR FOR SHIPPING		PAGE H10	
36	1	1	-	2	D185713-A	1	0	1	SUPERSTRUCT. REFRACT. DET'S - SH. 1	6847	HARBISON WALKER	
					(185714)	1	0	1	" " " SH. 2			
					(D185743)	1	0	1	" " " - SH. 3			
					BPF 215723				SUPERSTRUCTURE REFRACTORY (FINAL DESIGN)			
36	1	1		2	D185717-A	9	9	9	ZIRMUL REFRACTORY DET'S	6848	DIDIER-TAYLOR	
36	1	1		2	D185718-A	3	3	3	K3 REFRACTORY - SH. 1	6846	CARBORUNDUM	
					(D185719)	2	1	2	" " - SH. 2			
					(D185720)	3	3	3	" " - SH. 3			

ISSUED 8/26/80, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 F

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No. 1	Melter No. 2	Spare	Total		On Dwg.	To Vend.	To Fld.				
35	1	1	-	2	W737669	1	0	1	REFRACTORY ASSY - SH.1	6854	TOLEDO ENG.	
									(INSULATION INSTALLATION INTO MELTER SHELL)			
35					(W736915)	6	0	6	REFRACTORY ASSY - SH.2			
		REF.			—				TOP HEAD HANDL'G & SHIP'G FIXT.		PAGE H14	
		REF.			—				INSULATION GAGE & FIXTURES		PAGES H11 - 13	
		REF.			W748249				DUMMY HTR FOR SHIPPING		PAGE H10	
		REF.			D188792-A				FIBERFRAX COLLAR		PAGE B13	
36	1	1	-	2	D185715-A	6	2	6	FIBERFRAX INSULATOR (BOTTOM HEAD)	6851	METALLICS	
	1	1	-	2	-B				FIBERFRAX INSULATOR	"	"	
									(12 SEGMENT BOT. CORNER RING)			
36	1	1	-	2	D185716-A	12	7	12	FIBERFRAX UPPER HD INSERT	"	"	
	*	*		*	-B				" SLEEVE	*	*	
	2	2	2	6	-C				" "	"	"	
	*	*		*	-D				" "	*	*	
					* ONE EACH OF B & D MADE FROM D185716-C AT							
					ASSEMBLY BY TOLEDO ENG.							

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST 2308

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
No.1	No.2											
35	-	-	-	1	W741477	12	11	12	K3 GAGING FIXTURE	6247	CBI	
									INCL. P/M ITEMS 1 THRU 12	"	"	
					REF. W742149-A				TRAMMEL ASSEMBLY		PAGE H2	
					REF. BPF215867-SH. 2-16, 26, 27 & 33				GAGING FIXT. (FINAL DESIGN)	"	CBI	
36	-	-	-	1	D183699-N	19	15	19	TRAMMEL ROD	"	"	
36	-	-	-	1	D186811-D	4	3	4	NUT	"	"	
36	-	-	-	1	D186815-A	18	17	18	FIXTURE BASE	"	"	
				1	-B				LOCATING TEMPLATE	"	"	
				1	-C				" JIG	"	"	
36	-	-	-	1	D186816-A	15	13	15	RISER GAGE	"	"	
	-	-	-	1	-B				" SUPPORT	"	"	
	-	-	-	1	-C				" INSERT	"	"	
	-	-	-	2	-D				POST	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350H

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PAGE H 1

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter No.1	No.2	Spare	Total		On Dwg.	To Vend.	To Fld.				
35	-	-	-	1	W74147B	4	-	4	ZIRMUL FIXT. USAGE ASSEMBLIES	6247	CBI	
35	-	-	-	*	W742111-A	9	8	9	ASSY FOR CONTOUR GAGING & MATCH MARKING	"	"	
	-	-	-	*	(W742111-B)				ASSY FOR SHIPPING AND BLANCHARD GRINDING	"	"	
	-	-	-	*	(W742111-C)				ASSY FOR FLATNESS GAGING & MATCH MARKING	"	"	
	-	-	-	1	(W742111)				B/M ITEMS 1 THRU 3	"	"	
		REF.			BPF215867-SH 19-32				ZIRMUL FIXTURE (FINAL DESIGN)	"	"	
		REF.			W742149-A				TRAMMEL ASSY		PAGE H5	
		REF.			W742149-B				CONTOUR TEMPLATE ASSY		" H6	
		REF.			W742149-C				FLATNESS " "		" "	
36	-	-	-	1	D183699-B	19	15	19	POST	6247	CBI	
	-	-	-	1	-K				TRAMMEL ROD	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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PROJECT 951780

MACHINE. DWPF MELTER

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

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ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	1	W742668	6	6	6	WIRE CUTTING FIXTURE ASSY (K3 THROAT BLOCK)	8904	D.P. SCHUMAN	
									INCL. B/M ITEMS 1 THRU 10	"	"	
36	-	-	-	1	D187160-A	4	4	4	FRAME WELDMEN.	"	"	
36	-	-	-	1	D187161-A	5	5	5	LOCATING FRAME	"	"	
	-	-	-	1	-C				SUPPORT	"	"	
	-	-	-	1	-D				"	"	"	
	-	-	-	6	-E				HEX. BOLT	"	"	
	-	-	-	2	-F				" "	"	"	
	-	-	-	2	-G				WIRE HOLDER	"	"	
36	-	-	-	2	D188707-A	1	1	1	CLAMP BRACKET	"	"	
	-	-	-	2	-B				HOLD DOWN STRUT	"	"	
	-	-	-	4	-C				SWIVEL PAD	"	"	
	-	-	-	4	-D				RADIAL CLAMP	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350H

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	-	-	-	1	W802607-A	1	0	1	SUPERSTRUCTURE FIXTURE ASSY	8832	NOOTER	
									INCL. B/M ITEMS 1 THRU 3	"	"	
		REF.			BPF216444				FIXTURE DETAILS (FINAL DESIGN)	"	"	
36	-	-	-	1	D198039-A	2	0	2	FIXTURE SHELL	"	"	
36	-	-	-	2	D198040-A	1	0	1	NOZZLE INSERT	"	"	
	-	-	-	8	-B				" "	"	"	
	-	-	-	1	-C				JACKING SCREW	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 H

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	-	-	-	1	W804290	0	0	0	WIRE CUTTING FIXTURE ASSY (K3 RISER BLOCK)	8904	O.P. SCHUMAN	
									INCL. B/M ITEMS 1 & 2	"	"	
36	-	-	-	1	D198790-A	0	0	0	FRAME	"	"	
-	-	-	-	1	—				K3 BLOCK GRINDING FIXTURES	6846	CARBORUNDUM	
									(ONE SET FOR GRINDING JOINT			
									SURFACES ON INDIVIDUAL BLOCKS)			
					BPF 219530				FIXTURE ASSEMBLIES & DETAILS	6846*	KELLER TECH*	
									* FIXTURES DESIGNED & FABRICATED			
									BY KELLER FOR CARBORUNDUM ON			
									A CARBORUNDUM ORDER.			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
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S350H

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Mater		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	-	-	-	1	W741479-A	2	1	2	FIBERFRAX FORMING FIXT. ASSY (TOP HEAD)	AXC 6247	CBI	
									INCL. B/M ITEMS 1 THRU 3	"	"	
					REF. BPF215867-SH. 7, 10 & 11				ASSY DETAILS (FINAL DESIGN)	"	"	
36	-	-	-	1	D186814-A	12	11	12	BASE	"	"	
					-B				TOP	"	"	
					-C				SPACER	"	"	
35	-	-	-	*	W741479-B	2	1	2	FIBERFRAX TRIM FIXT. ASSY (TOP HEAD)	"	"	
					REF. BPF215867-SH. 8 & 9				ASSY DETAILS (FINAL DESIGN)	"	"	
36	-	-	-	1	D187144-A	5	4	5	TRIM FIXTURE	"	"	
					* W741479-A CONVERTED TO W741479-B BY REPLACING TOP (D186814-B) WITH D187144-A.							

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PROJECT 951780

PLANT SAVANNAH RIVER

Dwg. Type	No. Pieces			Drawing No.	Last Revision				Drawing Description	Order No. AXC 6247	Source	Transmittal Letter
	Melter No. 1	Spare	Total		On Dwg.	To Vend.	To Fd.					
35	-	-	1	W741480-A	2	1	2	FIBERFRAX FORMING FIXTURE ASSY. (BOTTOM HEAD)			CBI	
								INCL. B/M ITEMS 1 THRU 3			"	
				BPF 215867-SH	5	4	6	ASSY DETAILS (FINAL DESIGN)			"	
36	-	-	1	D186813-A	13	12	13	BASE			"	
				-B-				TOP			"	
				-C-				SPACER			"	
35	-	-	*	W741480-B	2	1	2	FIBERFRAX TRIM FIXTURE ASSY. (BOTTOM HEAD)			"	
				BPF 215867-SH	3	4	4	ASSY DETAILS (FINAL DESIGN)			"	
36	-	-	1	D186825-A	6	5	6	TRIM FIXTURE			"	
				*W741480-A				CONVERTED TO W741480-B BY REPLACING TOP (D186813-B) WITH D186825-A.				

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number	Area	Unit	Item
			\$350 H

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Mater No.1	Mater No.2	Spare	Total		On Dwg.	To Vend	To Fld.				
35	-	-	-	1	W743482-A	1	0	1	FIBERFRAX FORM, FIXT. ASSY (SIDE WALL)	6247	CBI	
		REF.			BPF 215867-SH. 17 & 18				ASSY DETAILS (FINAL DESIGN)	"	"	
36	-	-	-	1	D187370-A	11	8	11	BASE	"	"	
					B				TOP	"	"	
					C				SPACER	"	"	
35	-	-	-	*	W743482-B	1	0	1	FIBERFRAX TRIM FIXT. ASSY (SIDE WALL)	"	"	
		REF.			BPF 215867-SH. 17 & 18				ASSY DETAILS (FINAL DESIGN)	"	"	
36	-	-	-	1	D187370-D	11	8	11	TOP	"	"	
	-	-	-	1	-E				GAUGE	"	"	
					* W743482-A CONVERTED TO W743482-B BY REPLACING TOP (D187370-B) WITH D187370-D.							

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350H		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spars	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
-	-	-	-	1	—	-	-	-	TOP HEAD HANDLING AND SHIPPING FIXTURE FOR REFRACTORY LINED HEAD	638	KELLER TECH	
				1	BPF218879				FIXTURE ASSY & DETAILS	"	"	
-	-	-	-	1	—	-	-	-	TOP & BOTTOM HEAD FIBER- FRAX LINERS GRINDING FIXT.	6851	METTAULICS	
				1	BPF219393				FIXTURE ASSY & DETAILS	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	2	2	2	6	W800559	39	39	39	FEED TUBE & SUPPORT FRAME ASSY	6853	KELLER TECH	
									INCL. SIM ITEMS 1, 3 & 5 THRU 8	"	"	
		REF.			W747380				FEED TUBE ASSY - SH. 1		PAGE J3	
		REF.			W747898				SUPPORT FRAME ASSY - SH. 1		PAGE J5	
		REF.			W801544				SIGNAL FLAG ASSY - SH. 1		PAGE J7	
		REF.			W817421-A				LATCH ACTUATOR ASSY		PAGE J8	
					-B				" " "		PAGE J9	
		REF.			W826813				SHIPPING & STORAGE FIXTURE		PAGE J10	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No. 1	No. 2	Spare	Total		On Dwg.	To Vend.	To Fid.				
36	2	2	2	6	D189687-B	26	26	26	COVER	6853	KELLER TECH	
					- C				"	"	"	
36	2	2	2	6	D816121-A	3	3	3	PROCESS CONNECTOR ISOLATOR RING	"	"	
	2	2	2	6	- B				" " " "	"	"	
	2	2	2	6	- C				" " " "	"	"	
	2	2	2	6	- D				" " " "	"	"	
	20	20	20	60	- E				ISOLATOR	"	"	
36	2	2	2	6	D822023-A	0	0	0	HOSE SEPARATOR	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	2	2	2	6	14747350	32	29	32	FEED TUBE ASSY' - SH.1	6853	KELLER TECH	
35					(W820958)	8	4	8	FEED TUBE ASSY' - SH.2	"	"	
									INCL. B/M ITEMS 1 THRU 10	"	"	
36	2	2	2	6	D187871-Z	39	39	39	ISOLATOR	1489	COORS	
36	2	2	2	6	D188399-A	13	13	18	FEED TUBE - SH.1	6853	KELLER TECH	
36	-	-	-	-	(D188452)	16	16	16	" " - SH.2	"	"	
36	-	-	-	-	(D188454)	21	21	21	" " - SH.3	"	"	
36	-	-	-	-	(D188453)	34	34	34	" " - SH.4	"	"	
36	-	-	-	-	(D188400)	11	11	11	" " - SH.5	"	"	
36	-	-	-	-	(D198789)	9	9	9	" " - SH.6	"	"	
360	-	-	-	-	(D811183)	2	2	2	" " - SH.7	"	"	

ISSUED 8/24/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	4	4	4	12	D185708-A	17	17	17	LATCH PLATE	6853	KELLER TECH	
	4	4	4	12	-B				CAM	"	"	
	4	4	4	12	-C				PIN	"	"	
36	2	2	2	6	D189701-A	16	16	16	BAIL	"	"	
	4	4	4	12	-B				PIN	"	"	
36	2	2	2	6	D198204-C	8	7	8	SUPPORT SLEEVE	"	"	
	2	2	2	6	-D				RETAINER (SUPPORT SLEEVE)	"	"	
	2	2	2	6	-E				" RING	"	"	
36	2	2	2	6	D818789-A	0	0	0	ACTUATOR ANGLE	"	"	
	2	2	2	6	-B				" "	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350 J

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	2	2	2	6	W747898	28	27	28	SUPPORT FRAME ASSY-SH.1	6853	KELLER TECH	
									INCL. B/M ITEMS / THERE 6	"	"	
35					(W747900)	5	5	5	SUPPORT FRAME ASSY-SH.2			
36	4	4	4	12	D188678-A	14	14	14	LATCH	"	"	
	4	4	4	12	-B				PIN	"	"	
	4	4	4	12	-C				LATCH HOUSING	"	"	
36	4	4	4	12	D188680-A	3	3	3	BRACE	"	"	
36	2	2	2	6	D188682-A	17	17	17	SUPPORT FRAME	"	"	
									(MIDDLE SECTION, RIGHT SIDE)			
36	2	2	2	6	D188683-A	19	19	19	SUPPORT FRAME	"	"	
									(MIDDLE SECTION, LEFT SIDE)			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 J

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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PROJECT 951780

MACHINE DWPF MELTER

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	2	2	2	6	D188684-A	33	33	33	SUPPORT FRAME-REAR SECT.-SH.1	6853	KELLER TECH	
36					(D188685)	10	10	10	" " - " " - SH.2			
36					(D188686)	10	10	10	" " - " " - SH.3			
36	2	2	2	6	D188687-A	26	26	26	SUPPORT FRAME-FRONT SECT.-SH.1	"	"	
36					(D198935)	0	0	0	" " - " " - SH.2			
36	2	2	2	6	D816394-A	16	16	16	WATER CONNECTION	"	"	
36	2	2	2	6	D822023-B	0	0	0	ROD	"	"	
	2	2	2	6	-C				COVER	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 J

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT
PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	2	2	2	6	W801544	12	12	12	SIGNAL FLAG ASSY - SH.1	6853	KELLER TECH	
									INCL. B/M ITEMS 1,2,4,5,7,8 & 9	"	"	
35					(W801815)	11	11	11	SIGNAL FLAG ASSY - SH.2			
35					(W817436)	0	0	0	" " " - SH.3			
36	2	2	2	6	D189717-A	6	6	6	SIGNAL FLAG MOUNT'G BLOCK	"	"	
	2	2	2	6	-B				" " " "	"	"	
	2	2	2	6	-C				" " COUNTERWEIGHT	"	"	
	2	2	2	6	-D				FLAG	"	"	
	2	2	2	6	-E				FLAG TRIPPER	"	"	
	2	2	2	6	-F				CAM (FLAG ACTUATOR)	"	"	
	2	2	2	6	-G				MOUNTING BLOCK PIN	"	"	
36	2	2	2	6	D818783-F	0	0	0	TRIPPER BASE PLATE	"	"	
	2	2	2	6	-G				FLAG TRIPPER "	"	"	
	2	2	2	6	-H				SHIM	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350J

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	2	2	2	6	W817421-A	0	0	0	LATCH ACTUATOR ASSY	6853	KELLER TECH	
									INCL. B/M ITEM 1	"	"	
36	2	2	2	6	D818783-A	0	0	0	GUIDE BRACKET	"	"	
	2	2	2	6	-B				LATCH TRIPPER BLOCK	"	"	
	2	2	2	6	-E				ROD	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 J

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT
PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 J		

DUPONT
E. I. DU PONT DE NEMOURS & COMPANY
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WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2308

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Mat'l	No. 1	No. 2	Spare		On Dwg.	To Vend.	To Fld.				
35	2	2	2	2	6	1	0	1	SHIPPING & STORAGE FIXTURE	6853	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 15	"	"	
36	2	2	2	2	6	0	0	0	UPPER FRAME - SH. 1	"	"	
36						0	0	0	" - SH. 2			
36	4	4	4	4	12	0	0	0	SUPPORT BRACKET	"	"	
	4	4	4	4	12				RIGHT "	"	"	
	2	2	2	2	6				SUPPORT "	"	"	
36	2	2	2	2	6	0	0	0	BASE			
36	2	2	2	2	6	2	2	2	CENTER POST	"	"	
	2	2	2	2	6				BUSHING	"	"	
	8	8	8	8	24				GUARD	"	"	
	4	4	4	4	12				"	"	"	

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350 J

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE	ENGINEERING DEPARTMENT
	PARTS LIST 2308
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 J		

DUPONT
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INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2308

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Mater		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	1	1	1	3	W746741	81	75	81	THERMOVELL ASSY (E-NOZZLE)	6853	KELLER TECH	
									INCL. B/M ITEMS 1,3 THRU 6,8,9,10 & 11	"	"	
36	1	1	1	3	D187871-C	39	39	39	ISOLATOR	1489	COORS	
	4	4	4	12	- D				"	"	"	
	4	4	4	12	- E				"	"	"	
36	1	1	1	3	D188381-A	53	59	59	BRIDGE & WELL TUBE WELDMENT	6853	KELLER TECH	
36					(D188468)	2	2	2	NUT BLOCK	"	"	
36					(D199260)	6	6	6	DETAILS	"	"	
36	1	1	1	3	D188380-A	64	64	64	ELECTRICAL CONNECTOR END	"	"	
36	8	8	8	24	D188464-D	18	16	18	GASKET	"	"	
	2	2	2	6	-M				"	"	"	
36	4	4	4	12	D188475-B	12	12	12	RETAINING WASHER	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350L

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter No.1	No.2	Spare	Total		On Dwg.	To Vend.	To Fld.				
36	1	1	1	3	D816378-A	10	10	10	BAIL	6853	KELLER TECH	
36	2	2	2	6	D189723-B	47	47	47	PIN	"	"	
36	1	1	1	3	D199264-A	4	3	4	ISOLATOR	1489	COORS	
36	1	1	1	3	D199660-B	12	11	12	COLLAR	6853	KELLER TECH	
	1	1	1	3	-C				SUPPORT SLEEVE	"	"	
	1	1	1	3	-D				RETAINER (SUPPORT SLEEVE)	"	"	
	1	1	1	3	-E				" RING	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 L

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fid.				
	No.1	No.2										
35	1	1	1	3	W746743	77	70	77	THERMOWELL ASSY (C ₄ -NOZZLE)	6853	KELLER TECH	
									INCL. B/M ITEMS 1,3 THRU 6,8,9,10,11	"	"	
36	1	1	1	3	D187871-C	39	39	39	ISOLATOR	1489	COORS	
	4	4	4	12	- D				"	"	"	
	4	4	4	12	- E				"	"	"	
36	1	1	1	3	D-188378-A	58	58	58	BRIDGE & WELL TUBE WELDMENT	6853	KELLER TECH	
36					(D188468)	2	2	2	NUT BLOCK	"	"	
36					(D199260)	6	6	6	DETAILS	"	"	
36	1	1	1	3	D 188380-A	64	64	64	ELECTRICAL CONNECTOR END	"	"	
36	8	8	8	24	D 188464-D	18	16	18	GASKET	"	"	
	2	2	2	6	-M				"	"	"	
36	4	4	4	12	D 188475-B	12	12	12	RETAINING WASHER	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350L

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spere	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	1	3	D189723-A	47	47	47	BAIL	6853	KELLER TECH	
	2	2	2	6	-B				PIN	"	"	
36	1	1	1	3	D199264-A	4	3	4	ISOLATOR	1489	COORS	
36	1	1	1	3	D199660-B	12	11	12	COLLAR	6853	KELLER TECH	
	1	1	1	3	-C				SUPPORT SLEEVE	"	"	
	1	1	1	3	-D				RETAINER (SUPPORT SLEEVE)	"	"	
	1	1	1	3	-E				" RING	"	"	
	</											

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 L

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1	1	3	W746742	85	81	85	T.W. & CONDUCTIVITY PROBE ASSY (C3 NOZZLE)	6853	KELLER TECH	
									INCL. B/M ITEMS 1,3,4,5,6,8,9,10, & 12	"	"	
36	1	1	1	3	D187871-C	39	39	39	ISOLATOR	1489	COORS	
	4	4	4	12	-D				"	"	"	
	4	4	4	12	-E				"	"	"	
36	1	1	1	3	D188377-A	68	68	68	BRIDGE & WELL TUBE WELDMENT	6853	KELLER TECH	
36					(D188468)	2	2	2	NUT BLOCK	"	"	
36					(D199260)	6	6	6	DETAILS	"	"	
36	1	1	1	3	D188380-B	64	64	64	ELECTRICAL CONNECTOR END	"	"	
36	8	8	8	24	D188464-D	18	16	18	GASKET	"	"	
	2	2	2	6	-N				"	"	"	
36	4	4	4	12	D188475-B	12	12	12	RETAINING WASHER	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350M

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	1	3	D189723-C	47	47	47	BAIL	6853	KELLER TECH	
	2	2	2	6	-B				PIN	"	"	
36	1	1	1	3	D199264-B	4	3	4	ISOLATOR	1489	COORS	
36	1	1	1	3	D199660-B	12	11	12	COLLAR	6853	KELLER TECH	
	1	1	1	3	-C				SUPPORT SLEEVE	"	"	
	1	1	1	3	-D				RETAINER(SUPPORT SLEEVE)	"	"	
	1	1	1	3	-E				" RING	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350M

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fid.				
	No.1	No.2										
35	1	1	1	3	W745987	57	53	57	LEVEL DIP TUBE ASSY (C2 NOZZLE)	6853	KELLER TECH	
									INCL. B/M ITEMS 1,3,4,5 & 7 THRU 12	"	"	
36	1	1	1	3	D187871-C	39	39	39	ISOLATOR	1489	COORS	
36	1	1	1	3	D188382-A	57	56	57	PROCESS CONNECTOR END	6853	KELLER TECH	
36	1	1	1	3	D188385-A	24	23	24	LEVEL DIP TUBE - SH.1	"	"	
36					(D188386)	59	58	59	" " " - SH.2			
36					(D188468)	3	2	3	NUT BLOCK			
36	1	1	1	3	D188464-L	18	16	18	GASKET	"	"	
36	1	1	1	3	D189723-A	48	47	48	BAIL	"	"	
	2	2	2	6	-B				PIN	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350N

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MACHINE DRAWN AND PARTS LIST

PIANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
8350N

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WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT**

ENGINEER PARTS LIST

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	-	1	1	2	D199660-C	12	12	12	SUPPORT SLEEVE		EXIST. (PG. N2)	
	-	1	1	2	-D				RETAINER(SUPPORT SLEEVE)		"	
	-	1	1	2	-E				" RING		"	
36	-	1	1	2	D816121-A	3	3	3	CONNECTOR ISOLATION RING		"	
	-	1	1	2	-B				" " "		"	
	-	5	5	10	-E				ISOLATOR (LEXAN)		"	
				</								

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
535

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spars	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	2	2	2	6	W748396	55	47	55	T.V.CAMERA SUPPORT FRAME ASSY-SH.1	6853	KELLER TECH	
									INCL. B/M ITEMS 1,2,3 & 6 THRU 22	"	"	
35					(W748395)	38	38	38	T.V.CAMERA SUPPORT FRAME ASSY-SH.2			
35					(W814474)	20	20	20	" " " " " -SH.3			
35		REF.			W804866	72	-	72	T.V. BASIS DWG - SH.1		FOR INFO ONLY	
35		REF.			W807872	34	-	34	" " " - SH.2		" " "	
36	2	2	2	6	D188384-A	42	42	42	GUIDE BAR	6853	KELLER TECH	
	4	4	4	12	-B				THRUST WASHER	"	"	
	2	2	2	6	-D				BORESCOPE TUBE	"	"	
	-	-	-	1	-D				" " (USED AS GAUGE FOR BORESCOPES)	"	"	
36	2	2	2	6	D188693-A	33	33	33	BRIDGE	"	"	
	2	2	2	6	-B				COVER	"	"	
36					(D198926)	24	24	24	BRIDGE WELDMENT	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350P

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	2	2	2	6	D188695-A	52	52	52	ELECTRICAL CONNECTOR	6853	KELLER TECH	
36	2	2	2	6	D188696-A	10	10	10	FLOATING AIR MANIFOLD	"	"	
36	2	2	2	6	D188697-A	18	18	18	COUNTERWEIGHT TOWER	"	"	
	2	2	2	6	-B				" "	"	"	
36	2	2	2	6	D188698-A	41	41	41	GUIDE PLATE	"	"	
	2	2	2	6	-B				" "	"	"	
	2	2	2	6	-C				COVER	"	"	
	2	2	2	6	-D				"	"	"	
36	2	2	2	6	D188700-A	10	10	10	MOUNTING PLATE	"	"	
	2	2	2	6	-C				TOWER BRACE	"	"	
	4	4	4	12	-D				SIDE MOUNTING PLATE	"	"	
	4	4	4	12	-E				SHIM WASHER	"	"	
	2	2	2	6	-F				BRACE PLATE	"	"	
	2	2	2	6	-G				" "	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350P

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

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ISSUED 8/26/BE, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350P		

DUPONT
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350Q		

DUPONT
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ENGINEERING DEPARTMENT
PARTS LIST 2308

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Q.

PROJECT 951780

ISSUED 8/26/88 1/31/89

DWPF MELTER
MACHINE

Engineering Number		
Area	Unit	Item
S350Q		

OUTPOINT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
2308
PARTS LIST

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No.1	No.2	Spare	Total		On Dwg.	To Vend.	To Fld.				
35	1	1	-	2	W748709	32	31	32	RISER/POUR SPOUT HEATER ASSY	6853	KELLER TECH	
					BPF 217829				SHIPPING & STORAGE FIXT. (VENDOR'S DESIGN)	"	"	
		REF.			W748710				SHIPPING BRACKET ASSY (FOR HTR LEADS)		PAGE T4	
36	1	1	-	2	D188379-C	8	3	8	RISER HTR LEAD ISOLATOR	8417	WESGO	
36	1	1	-	2	D188383-A	8	5	8	WASHER	6853	KELLER TECH	
	1	1	-	2	-B				NUT	"	"	
36	1	1	-	2	D188465-C	5	1	5	GASKET	392	METALLICS	
	1	1	-	2	-D				"	"	"	
36	1	1	-	2	D188705-A	18	18	18	HEATER CORE - SH.1	6853	KELLER TECH	
					(D188706)	12	12	12	" " - SH.2	"	"	
					(D198796)	5	5	5	" " - SH.3	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350T

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No. 1	No. 2										
36	1	1	-	2	D188774-A	16	16	16	POUR SPOUT STRIP HEATER	6853	KELLER TECH	
36	1	1	-	2	D188775-A	9	9	9	RISER STRIP HEATER	"	"	
36	1	1	-	2	D188786-A	20	20	20	RISER HEATER SHELL	"	"	
	1	1	-	2	-B				POUR SPOUT HEATER SHELL	"	"	
36	1	1	-	2	D188787-A	18	12	18	SLEEVE (RISER)	341	ZIRCAR	
	1	1	-	2	-B				" "	"	"	
	1	1	-	2	-C				" (POUR SPOUT)	"	"	
36	1	1	-	2	D188788-A	8	6	8	ISOLATOR (RISER OUTER)	8417	WESGO	
	7	7	-	14	-B		↓		" "	"	"	
	2	-	-	2	-C		↓		" "	"	"	
	-	2	-	2	-C		8		" "	1489	COORS	
	4	4	-	8	-E		6		" (SPACER)	8417	WESGO	
	72	72	-	144	-F		↓		" "	"	"	
	14	14	-	28	-G		↓		" "	"	"	
	2	2	-	4	-H		↓		" "	"	"	
	6	6	-	12	-J		↓		" "	CUT FROM SPARE "G's BY KELLER		

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350T

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	-	2	D188789-A	9	6	9	ISOLATOR (POUR SPOUT INNER)	8417	WESGD	
	3	3	-	6	-B				" (" " ")	"	"	
	1	1	-	1	-C				" (" " OUTER)	"	"	
	2	2	-	4	-E				" (" " ")	"	"	
	1	1	-	1	-F				" RING	"	"	
	1	1	-	1	-H				" (POUR SPOUT OUTER)	"	"	
36	1	1	-	2	D188790-A	7	7	7	ISOLATOR (RISER INNER)	"	"	
	6	6	-	12	-B				" (" " ")	"	"	
	1	1	-	2	-C				" (" " ")	"	"	
	1	1	-	2	-D				" (" " ")	"	"	
	1	1	-	2	-E				" (" " ")	"	"	
	1	1	-	2	-F				" (RISER)	"	"	
36	1	1	-	2	DB19588-B	0	0	0	INSULATOR	1716	ZIRCAR	
	1	1	-	2	-D				"	"	"	
	1	1	-	2	-G				"	"	"	

ISSUED 9/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350T

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PF

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MACHINE DRAWING AND PARTS LIST

PLANT Savannah River

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350T		

DUPONT
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1	-	2	W808480	17	17	17	DRAIN VALVE ASSY- SH. 1	6850	KELLER TECH	
									INCL. B/M ITEMS 1, 8, 9, 11, 12, 14,	"	"	
									16, 17, 19, 21, 22, 25 THRU 32, 34, 35,	"	"	
									36, 38, 41 & 42	"	"	
					(W808478)	3	2	3	DRAIN VALVE ASSY - SH. 2			
					(W808479)	9	4	9	" " " - SH. 3			
					(W812259)	1	1	1	" " " - SH. 4			
					(W810640)	9	9	9	" " " - SH. 5			
					(W810607)	12	10	12	" " " - SH. 6			
					(W809848)	12	11	12	" " " - SH. 7			
					(W809842)	12	10	12	" " " - SH. 8			
		REF.			W810644				DRAIN VALVE SHIPP'G ASSY-SH.1		PAGE U5	
		REF.			W812256				PLUG BELLOWS INSTALL. ASSY		PAGE U14	
		REF.			W812258				DRAIN VALVE HTR ASSY- SH.1		PAGE U17	
		REF.			W812348				THERMOCOUPLE MOUNT'G ASSY		PAGES U28-31	
		REF.			W817424				PROBE BELLOWS ASSY		PAGE U10	
		REF.			W817435				PLUG " "		PAGE U15	
		REF.			W817437				CANISTER " " - SH.1		PAGE U6	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S35011

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PA

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D199137-A	2	2	2	NUT	6850	KELLER TECH	
	1	1	-	2	-B				SLEEVE NUT	"	"	
	1	1	-	2	-C				"	"	"	
36	2	2	-	4	D199261-A	6	6	6	ANGLE	"	"	
	3	3	-	6	-B				SPACER	"	"	
	1	1	-	2	-C				PIPE	"	"	
	4	4	-	8	-D				RETAINER	"	"	
	1	1	-	2	-E				ANGLE	"	"	
36	1	1	-	2	D199291-A	6	6	6	SWITCH MTG BOX (PROBE)	"	"	
	1	1	-	2	-B				ACTUATOR ROD GUIDE (PROBE)	"	"	
	1	1	-	2	-C				SPACER (PROBE)	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D199300-A	12	12	12	SWITCH MTG BOX (CANISTER)	AXC 6850	KELLER TECH	
	1	1	-	2	-B				" COVER "	"	"	
	1	1	-	2	-C				ACTUATOR ROD GUIDE "	"	"	
	1	1	-	2	-D				" " (CANISTER)	"	"	
	1	1	-	2	-E				SPACER (CANISTER)	"	"	
	4	4	-	8	-F				BUSHING "	"	"	
	1	1	-	2	-G				BRACKET "	"	"	
36	1	1	-	2	D199630-A	14	14	14	ACTUATOR ARM (PLUG)	"	"	
	1	1	-	2	-B				SWITCH MTG BOX (PLUG)	"	"	
	1	1	-	2	-C				" COVER "	"	"	
36	1	1	-	2	D199632-A	5	5	5	SWITCH COVER (PROBE)	"	"	
	2	2	-	4	-B				RETAINER "	"	"	
	2	2	-	4	-C				BUTTON "	"	"	
	1	1	-	2	-D				ACTUATOR ROD "	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

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ENGINEERING DEPARTMENT
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	1	1	-	2	W810644	24	21	24	DRAIN VALVE SHIPP'G ASSY-SH.1	6850	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 11 AND	"	"	
									13 THRU 22	"	"	
					(W812260)	5	5	5	DRAIN VALVE SHIPP'G ASSY-SH.2			
		REF.			W808480				DRAIN VALVE ASSY - SH.1		PAGE U1	
36	1	1	-	2	D199102-A	8	8	8	LIFTING & SHIPPING BRACKET	6850	KELLER TECH	
36	1	1	-	2	D808583-A	5	5	5	SHIPPING PLATE	"	"	
	1	1	-	2	-B				PLATE	"	"	
36	1	1	-	2	D808584-A	1	1	1	PLATE	"	"	
	1	1	-	2	-B				GASKET	"	"	
	1	1	-	2	-C				PLUG	"	"	
36	1	1	-	2	D832214-A	0	0	0	SHIPPING FRAME-SH.1	"	"	
36					(D198180)	14	14	14	" " - SH.2	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 U		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No.1	No.2	Spare	Total		On Dwg.	To Vend	To Fld.				
35	1	1	-	2	WB17437	0	0	0	CANISTER BELLOWS ASSY-SH.1	6850	KELLER TECH	
									INCL B/M ITEMS 1 THRU 17	"	"	
					(WB17438)	1	1	1	CANISTER BELLOWS ASSY-SH.2			
		REF.			BPF218892				BELLOWS DET. (FINAL DESIGN)	613	METAL BELLOWS	
36	1	1	-	2	DB16387-A	2	1	2	ADAPTER BELLOWS - SH.1	613	METAL BELLOWS	
36C					(DB11176)	1	0	0	" " - SH.2			
		REF.			W816578				ADAPT. BELLOWS SHIPP'G/HANDL'G ASSY		PAGE U9	
36	1	1	-	2	DB16390-A	3	2	3	CANISTER BELLOWS - SH.1	613	METAL BELLOWS	
36C					(DB11179)	1	0	0	" " - SH.2			
		REF.			W816581				CANIST. BELLOWS SHIPP'G/HANDL'G ASSY		PAGE U8	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

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PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

Engineering Number		
Area	Unit	Item
\$350 U		

ISSUED 8/26/88, 1/31/89

DWPF MELTER
MACHINE

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INCORPORATED
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ENGINEERING DEPARTMENT
PARTS LIST 2308

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	1	1	-	2	W817424	1	0	1	PROBE BELLOWS ASSY	6850	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 8	"	"	
		REF.			BPF218892				BELLOWS DETAIL (FINAL DESIGN)	613	METAL BELLOWS	
36	2	2	-	4	D816389-A	3	2	3	PROBE BELLOWS - SH.1	"	"	
36C					(D811178)	1	0	1	" " - SH.2			
		REF.			W816579				SHIPPING/HANDLING ASSY(LOWER)		PAGE U13	
		REF.			W817412				" " " (UPPER)		PAGE U12	
36	1	1	-	2	D816397-A	5	5	5	LOWER FLANGE	6850	KELLER TECH	
36	1	1	-	2	D816398-A	3	3	3	INTERMEDIATE FLANGE	"	"	
36	1	1	-	2	D816399-A	3	3	3	UPPER FLANGE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 U		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	1	1	-	2	W812256	18	18	18	PLUG BELLOWS INSTALL'N ASSY	6850	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 5	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Alter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1	-	2	W817435	5	5	5	PLUG BELLOWS ASSY	6850	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 8	"	"	
		REF.			BPF218892				BELLOWS DETAILS (FINAL DESIGN)	613	METAL BELLOWS	
36	2	2	-	4	D816388-A	3	2	3	PLUG BELLOWS - SH.1	"	"	
36C					(D811177)	1	0	1	" " - SH.2			
		REF.			W816580				SHIPPING & HANDLING ASSY		PAGE U16	
36	3	3	-	6	D816392-A	4	4	4	COLUMN	6850	KELLER TECH	
36	1	1	-	2	D818786-A	6	6	6	INTERMEDIATE PLATE	"	"	
36	1	1	-	2	D818787-A	3	3	3	LOWER PLATE	"	"	
36	1	1	-	2	D818788-A	3	3	3	UPPER "	"	"	
36	3	3	-	6	D832212-E	4	4	4	STOP	"	"	
	3	3	-	6	-F				GUIDE	"	"	

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350 U		

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2308
PARTS LIST

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	-	2	D189132-A	7	7	7	STRIP HEATER (ZONE III)	6850	KELLER TECH	
36	1	1	-	2	D189133-A	11	11	11	" " (ZONE IV)	"	"	
36	1	1	-	2	D189134-A	6	6	6	" " (ZONE V)	"	"	
36	1	1	-	2	D189150-A	6	6	6	ISOLATOR (INNER)	8823	WESGO	
	1	1	-	2	-B				" "	"	"	
36	1	1	-	2	D189451-A	7	6	7	" "	"	"	
	1	1	-	2	-B				" RING	"	"	
	1	1	-	2	-C				" SPACER	"	"	
36	2	2	-	4	D189455-A	1	1	1	" (OUTER)	"	"	
	1	1	-	2	-B				" "	"	"	
	2	2	-	4	-C				" STRIP	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spere	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
36	1	1	-	2	D189456-A	1	1	1	ISOLATOR STRIP	8823	WESGO	
	19	19	-	38	-B				" "	"	"	
	1	1	-	2	-C				" "	"	"	
	1	1	-	2	-D				" "	"	"	
	6	6	-	12	-E				" "	"	"	
	9	9	-	18	-G				" "	"	"	
	6	6	-	12	-H				" "	"	"	
	1	1	-	2	-J				" "	"	"	
36	1	1	-	2	D189458-A	0	0	0	INSULATOR RING	618	ZIRCAR	
	1	1	-	2	-B				" "	"	"	
	1	1	-	2	-C				" "	"	"	
	1	1	-	2	-D				" "	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter No. 1	Melter No. 2	Spare	Total		On Dwg.	To Vend.	To Fld.				
36	1	1	-	2	D189464-E	2	2	2	ISOLATOR (LEAD)	8823	WESGO	
	1	1	-	2	-F				" "	"	"	
	1	1	-	2	-G				" RING	"	"	
36	1	1	-	2	D189465-A	5	5	5	" (INNER)	"	"	
	1	1	-	2	-B				" "	"	"	
	2	2	-	4	-C				" RING	"	"	
	1	1	-	2	-D				" (OUTER)	"	"	
	1	1	-	2	-E				" "	"	"	
36	1	1	-	2	D189466-A	6	6	6	" (INNER)	"	"	
	1	1	-	2	-B				" "	"	"	
	1	1	-	2	-C				" "	"	"	
	1	1	-	2	-D				" "	"	"	
36	1	1	-	2	D189475-A	6	6	6	UPPER SHELL	6850	KELLER TECH	
	1	1	-	2	-B				SLEEVE	"	"	
	1	1	-	2	-C				SPACER	"	"	
	1	1	-	2	-D				SUPPORT BAR	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S35011

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fid.				
	No.1	No.2										
36	1	1	-	2	D189496-A	4	4	4	ISOLATOR (INNER)	8823	WESGO	
	1	1	-	2	-B				" "	"	"	
	1	1	-	2	-C				"	"	"	
36	1	1	-	2	D189497-A	3	3	3	" (INNER)	"	"	
	1	1	-	2	B				" "	"	"	
36	1	1	-	2	D189676-A	3	3	3	" "	"	"	
	1	1	-	2	-B				" "	"	"	
	1	1	-	2	-C				" (OUTER)	"	"	
	1	1	-	2	-D				" "	"	"	
36	1	1	-	2	D189677-A	2	2	2	" "	"	"	
	1	1	-	2	-B				" "	"	"	
	2	2	-	4	-C				" "	"	"	
36	1	1	-	2	D189679-A	0	0	0	INSULATOR	618	ZIRCAR	
	1	1	-	2	-B				"	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
\$350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Master		Spare	Total		On Dwg.	To Vend.	To Fid.				
	No. 1	No. 2										
36	1	1	-	2	D189682-A	2	2	2	INSULATOR	618	ZIRCAR	
	1	1	-	2	- C				"	"	"	
36	1	1	-	2	D198761-A	0	0	0	"	"	"	
36	1	1	-	2	D198910-A	4	4	4	PROBE ALIGNER	6850	KELLER TECH	
	2	2	-	4	-B				ROD	"	"	
	1	1	-	2	-C				CLAMP RING	"	"	
36	1	1	-	2	D199652-A	0	0	0	ISOLATOR (INNER)	8823	WESGO	
	1	1	-	2	-B				" (OUTER)	"	"	
	1	1	-	2	-C				" RING	"	"	

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U		

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D199663-A	0	0	0	ISOLATOR (INNER)	8823	WESGO	
	1	1	-	2	-B				" (OUTER)	"	"	
36	1	1	-	2	D199667-A	0	0	0	HALF CAP	6850	KELLER TECH	
	1	1	-	2	B				" "	"	"	
36	1	1	-	2	D199669-A	3	3	3	SHELL (ZONE 3) - SH.1	"	"	
36					(D199670)	1	1	1	" " - SH.2			
36	1	1	-	2	D199671-A	1	1	1	" (ZONE 5)	"	"	
36	1	1	-	2	D199672-A	4	4	4	GLAND FOLLOWER	"	"	
	1	1	-	2	-B				RING	"	"	
	4	4	-	8	-C				RETAINER	"	"	
36	1	1	-	2	D199673-A	4	4	4	SHELL (ZONE 4)	"	"	
	1	1	-	2	-B				" "	"	"	
36	1	1	-	2	D199675-A	4	4	4	PROBE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D808578-A	0	0	0	INSULATOR	618	ZIRCAR	
36	1	1	-	2	D808579-A	0	0	0	" RING	"	"	
	1	1	-	2	-B				" "	"	"	
	1	1	-	2	-C				"	"	"	
	1	1	-	2	-D				"	"	"	
	1	1	-	2	-E				"	"	"	
	1	1	-	2	-F				"	"	"	
36	1	1	-	2	D818784-A	15	15	15	PLUG	6850	KELLER TECH	
	1	1	-	2	-B				GLAND RING	"	"	
	1	1	-	2	-C				PACKING FOLLOWER	"	"	
	2	2	-	4	-D				SPRING RETAINER	"	"	
36	1	1	-	2	D832212-D	4	4	4	INSULATOR SPACER	6850	KELLER TECH	
	1	1	-	2	-G				" GUIDE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350U

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

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MACHINE DWPF MELTER

Engineering Number		
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter No. 1	Melter No. 2	Spare	Total		On Dwg.	To Vend.	To Fld.				
36	1	1	-	2	D189464-A	2	2	2	ISOLATOR (INNER)	8823	WESGO	
	2	2	-	4	-B				" "	"	"	
	3	3	-	6	-D				" (OUTER)	"	"	
36	1	1	-	2	D189682-B	2	2	2	INSULATOR	618	ZIRCAR	
36	1	1	-	2	D198783-A	30	30	30	UPPER SHELL & CORE	6850	KELLER TECH	
	1	1	-	2	-B				ALIGNMENT ROD	"	"	
36	1	1	-	2	D816888-A	0	0	0	STRIP HEATER (ZONE 1)	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350U

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PLANT SAVANNAH RIVER

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MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter					
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.									
	No. 1	No. 2															
35	4	4	-	8	W812348-B	2	0	2	THERMOCOUPLE MOUNT'G ASSY	6850	KELLER TECH						
									INCL. B/M ITEMS 1 THRU 3	"	"						
36	8	8	-	16	D187871-L	39	33	39	ISOLATOR	8823	WESGO						
	4	4	-	8	-N				"	"	"						
	4	4	-	8	-R				"	"	"						
36	16	16	-	32	D188464-F	18	16	18	GASKET	6850	KELLER TECH						
36	4	4	-	8	D188475-A	12	11	12	RETAINING WASHER	"	"						
36	4	4	-	8	D189479-B	11	11	11	SUPPORT (T/C)	"	"						

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	2	2	-	4	W812348-C	2	0	2	THERMOCOUPLE MOUNT& ASSY	6850	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 3	"	"	
36	4	4	-	8	D187871-L	39	33	39	ISOLATOR	8823	WESGO	
	2	2	-	4	-P				"	"	"	
	2	2	-	4	-R				"	"	"	
36	8	8	-	16	D188464-F	18	16	18	GASKET	6850	KELLER TECH	
36	2	2	-	4	D188475-A	12	11	12	RETAINING WASHER	"	"	
36	2	2	-	4	D189479-A	11	11	11	SUPPORT (T/C)	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	2	2	-	4	W812348-D	2	0	2	THERMOCOUPLE MOUNT'G ASSY	6850	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 5	"	"	
36	4	4	-	8	D187871-L	39	33	39	ISOLATOR	8823	WESGO	
	2	2	-	4	- P				"	"	"	
	2	2	-	4	- R				"	"	"	
36	8	8	-	16	D188464-F	18	16	18	GASKET	6850	KELLER TECH	
36	2	2	-	4	D188475-A	12	11	12	RETAINING WASHER	"	"	
36	2	2	-	4	D189479-D	11	11	11	SUPPORT (T/C)	"	"	
	2	2	-	4	-E				SUPPORT BRACKET			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 9S1780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1		2	W801823	33	30	33	POUR SPOUT BELLOWS ASSY-SH.1	8901	KELLER TECH	
					(W803460)	38	36	38	" " " " -SH.2			
35									INCL. B/M ITEMS 1 THRU 27	"	"	
35					(W816042)	8	8	8	POUR SPOUT BELLOWS ASSY- SH.3			
35					(W816050)	1	1	1	" " " " - SH.4			
35					(W823460)	0	0	0	" " " " -SH.5			
		REF.			W804231				UPPER ARM ACTUATOR ASSY		PAGE V5	
		REF.			W814500				UPPER ADAPTER BELLOWS ASSY		PAGE V7	
		REF.			W816001				ACT. BELLOWS SHIPG/HANDLG ASSY		PAGE V6	
		REF.			W816002				LOWER ADAPTOR BELLOWS ASSY		PAGE V8	
		REF.			W817478				SWITCH ACTUATOR ASSY		PAGE V11	
		REF.			W823464				WINDOW ASSY		PAGE V12	
		REF.			W823499				MIRROR ASSY		PAGE V13	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	1	1	-	2	D187869-A	8	8	8	COUNTERWEIGHT BOX	8901	KELLER TECH	
	1	1	-	2	-B				" "	"	"	
36	1	1	-	2	D188703-A	15	13	15	UPPER ARM	"	"	
	2	2	-	4	-B				- VOID -	"	"	
	1	1	-	2	-C				- VOID -	"	"	
36	1	1	-	2	D198763-A	46	46	46	BELLOWS FRAME - SH.1	"	"	
					(D198764)	25	25	25	" " - SH.2			
					(D198765)	16	16	16	" " - SH.3			
					(D823776)	0	0	0	" " - SH.4			
					(D198767)	51	51	51	" " - SH.5			
					(D198768)	17	17	17	" " - SH.6			
					(D198769)	50	50	50	" " - SH.7			
					(D198770)	17	17	17	" " - SH.8			
					(D823777)	3	3	3	" " - SH.9			
					(D199448)	10	10	10	" " - SH.10			
					(D823798)	2	2	2	" " - SH.11			
36	1	1	-	2	D199447-A	0	0	0	SHIELD (USED ON D823798)	"	"	
	1	1	-	2	-B				RING	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	2	2	-	4	D815252-A	2	2	2	CLEVIS	8901	KELLER TECH	
	2	2	-	4	- B				"	"	"	
	2	2	-	4	- C				"	"	"	
36	2	2	-	4	D815270-A	2	2	2	GUIDE	"	"	
	8	8	-	16	- B				ROLLER	"	"	
	2	2	-	4	- C				SHIM	"	"	
	2	2	-	4	- D				SPACER	"	"	
36	1	1	-	2	D815271-A	0	0	0	SLIDE	"	"	
	2	2	-	4	- B				GUIDE	"	"	
	1	1	-	2	- C				FLANGE	"	"	
36	1	1	*	2	D815274-A	12	8	12	ACTUATOR BELLOWS - SH.1	"	"	
36C					(D811172)	11	10	11	" " - SH.2	"	"	
					* SEE PAGE	V14						
					REF.	BPF 218813			BELLOWS DETAIL (FINAL DESIGN)			
36	1	1	-	2	D815436-A	0	0	0	LOWER ARM	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Jnit	Item
S350

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
36	3	3	-	6	D815438-D	1	1	1	WASHER	8901	KELLER TECH	
36	1	1	-	2	D815440-A	1	1	1	GUIDE	"	"	
	1	1	-	2	-B				"	"	"	
36	2	2	-	4	D815448-A	1	1	1	GUIDE BLOCK	"	"	
	2	2	-	4	-B				COVER PLATE	"	"	
36	1	1	-	2	D815459-A	8	8	8	COUNTERWEIGHT BOX	"	"	
36	4	4	-	8	D816113-A	0	0	0	FLANGE	"	"	
	1	1	-	2	-C				PIN	"	"	
	4	4	-	8	-E				GUIDE BUSHING	"	"	
	4	4	-	8	-F				SPACER	"	"	
36	1	1	-	2	D816380-A	0	0	0	ROLLER BAR	"	"	
36	1	1	-	2	D824843-A	2	2	2	BRACKET	"	"	
36	1	1	-	2	D824844-A	4	4	4	WINDOW TOOL	"	"	
36	1	1	-	2	D840285-A	0	-	0	BAIL		BY FIELD	
36	2	2	-	4	-B				PIN		"	
36	1	1	-	2	D841207-A	0	-	0	WINDOW TOOL RETAINER		"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

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Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No.1	No.2										
35	1	1	-	2	W804231	12	12	12	UPPER ARM ACTUATOR ASSY	8901	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 9	"	"	
36	1	1	-	2	D188466-A	4	4	4	UPPER PLATE	"	"	
	1	1	-	2	-B				LOWER "	"	"	
36	1	1	-	2	D188702-A	11	11	11	ACME SCREW (SH.1)	"	"	
	1	1	-	2	-B				" "	"	"	
					(D199637)	2	2	2	" " (SH.2)			
36	1	1	-	2	D188704-A	9	9	9	BUSHING	"	"	
	1	1	-	2	-B				"	"	"	
	2	2	-	4	-C				WASHER	"	"	
	4	4	-	8	-D				GUIDE	"	"	
	5	5	-	10	-E				NUT	"	"	
36	2	2	-	4	D816113-B	0	0	0	GUIDE BUSHING	"	"	
	2	2	-	4	-D				SPACER	"	"	
	1	1	-	2	D816129-A	0	0	0	GUIDE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

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MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

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MACHINE DWPF MELTER

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MACHINE WPF MELTER

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MACHINE DRAWING AND PARTS LIST

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MACHINE DWPF MELTER

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E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
PARTS LIST 2308

IPA

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter		
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.						
	No.1	No.2												
35	1	1	-	2	W823464	4	4	4	WINDOW ASSEMBLY	8901	KELLER TECH			
									INCL. B/M ITEMS 1 THRU 10	"	"			
36	1	1	-	2	D824838-A	0	0	0	FRAME (BACK)	"	"			
36	1	1	-	2	D824839-A	0	0	0	" (FRONT)	"	"			
36	1	1	2*	2	D824840-A	9	9	9	WINDOW	"	"			
					*FOR REPLACEMENT AT END OF COLD RUN IF NECESSARY									
36	1	1	-	2	D824845-A	0	0	0	HOUSING	"	"			
	46	46		92	B				PLUNGER	"	"			
	1	1	-	2	C				HOUSING	"	"			
	1	1	-	2	D				PLATE	"	"			
36	1	1	-	2	D824846-A	0	0	0	FRONT PLATE	"	"			
	1	1	-	2	-B				SPACER	"	"			
	1	1	-	2	-C				BACK PLATE	"	"			
	9	9	-	18	-D				SPACER	"	"			
	8	8	-	16	-E				ROLLER	"	"			
	2	2	-	4	-F				SPACER	"	"			

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350V

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PAGE V12

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend	To Fld.				
	No.1	No.2										
35	1	1	-	2	W823499	0	0	0	MIRROR ASSEMBLY	8901	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 9	"	"	
36	1	1	-	2	D824841-A	0	0	0	MIRROR	"	"	
	1	1	-	2	-B				ADJUSTMENT ARM	"	"	
36	1	1	-	2	D824842-A	0	0	0	SWIVEL	"	"	
	1	1	-	2	-B				CAP	"	"	
	1	1	-	2	-C				PLATE	"	"	

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
5350V

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PA 1/3

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No. AXC	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No. 1	No. 2										
35	*	*	1	1	W816001	2	1	2	ACTUATOR BELLOWS SHIPPING AND HANDLING ASSY INCL. B/M ITEMS 1 THRU 4	1992	METAL BELLOWS	
36	*	*	1	1	D815274-A	12	8	12	ACTUATOR BELLOWS - SH. 1	"	"	
36C					(D811172)	11	10	11	" " - SH. 2			
					* SEE PAGE V 6							
35	*	*	1	1	W816015	3	2	3	UPPER BELLOWS SHIPPING AND HANDLING ASSY INCL. B/M ITEMS 1 THRU 4	"	"	
36	*	*	1	1	D815272-A	9	3	9	UPPER ADAPTER BELLOWS - SH. 1	"	"	
36C					(D811173)	8	6	8	" " " - SH. 2			
					* SEE PAGE V 9							

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350V

E. I. DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT PARTS LIST <u>2308</u>

PAGE V14

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVERPROJECT 951780

Dwg. Type	No. Pieces				Drawing No.	Last Revision			Drawing Description	Order No.	Source	Transmittal Letter
	Melter		Spare	Total		On Dwg.	To Vend.	To Fld.				
	No. 1	No. 2										
35	*	*	1	1	W816014	2	1	2	LOWER BELLOWS SHIPPING AND HANDLING ASSY	1992	KELLER TECH	
									INCL. B/M ITEMS 1 THRU 4	"	"	
36	*	*	1	1	D815273-A	5	0	5	LOWER ADAPTER BELLOWS-SH.1	"	"	
36c					(D811171)	7	5	7	-SH.2			
					* SEE PAGE V10							
<u>NOTE:</u>												
SPARES LISTED ON PAGES V14 & 15 ARE TO BE USED												
AS REPLACEMENTS AT END OF COLD RUN AND												
PRIOR TO HOT START-UP (IF NECESSARY).												

ISSUED 8/26/88, 1/31/89MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350V

E I DU PONT DE NEMOURS & COMPANY INCORPORATED WILMINGTON, DELAWARE ENGINEERING DEPARTMENT	
PARTS LIST	<u>2308</u>

PAI

1/15

MACHINE DRAWING AND PARTS LIST

PLANT SAVANNAH RIVER

PROJECT 951780

[illegible]

ISSUED 8/26/88, 1/31/89

MACHINE DWPF MELTER

Engineering Number		
Area	Unit	Item
S350W		

DUPONT
E I DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT
2308
PARTS LIST

PAGE W

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 131 Augusta GA 30913
(TWX 810-771-2871) TEL 803-725-6211 WU AUGUSTA GADATE
10/14/84

ORDER NO.

AXC

613W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.FURNISH
PACKING
LIST
FOR EACH SHIPMENTTO
Metal Bellows Corp.
200 Science Drive
Moorpark, CA 93021-8010
Attn: S. SauvePlease Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-83
REQUIRED DELIVERY PROMISED SHIPPING DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN
OBTAINING QUOTATIONS, MATERIALS AND SERVICES USED TO FILL THIS ORDER
OPS 1: CERTIFIED FOR NATIONAL DEFENSE
OPS 2: UNDER OPS REGULATION

OPS 1: CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

B ☐

CASH TERMS

VIA

FOB

PRICE

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
		This alteration issued to correct quantity of the following item as shown below:	
2	5999-350-19-5	Plug Bellows Assy @ \$8,970.00/ea.	
		No change in price which remains at \$226,380.00	
		ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.	
		DRAIN VALVE BELLOW	
	SHEET ☐ FINAL ☐	PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
		EXECUTED BY A. M. Lawrence	9S1780 mfc 2-613
		ISSUING POINT AUGUSTA, GA	ORIGINATOR 1-0-C-
		BUYER	AMOUNT \$226,380.00

MARK AND SHIP AS FOLLOWS:
TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

DEST

AXC-613-W AG1

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
TAX. PURCHASER TO FURNISH SOUTH CAROLINA
SALES TAX EXEMPTION CERTIFICATE TO E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
MATERIALS AND SERVICES FROM E. I. DU PONT DE
NEMOURS & COMPANY. SOUTH CAROLINA
SALES TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2671) TEL 803-725-8211 WU. AUGUSTA, GA)

DATE		
MO	DAY	YR
10	08	86

ORDER NO.

AXC 613W

TO

Metal Bellows Corp.
200 Science Drive
Moorpark, CA 93021-8010
Attn: S. SauveFURNISH
PACKING
LIST
FOR EACH SHIPMENTORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

11/10/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-411 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 1)

B-11-01 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
MODIFY ORDER IN PART, AS PER THE "LATEST" REVISED SPECIFICATION.			
1	S350-185-19-1	Canister Bellows Assembly	\$45,980.00
1	S999-350-19-1	Canister Bellows Assembly (Spare)	\$45,980.00
1	S350-185-19-4	Adapter Bellows Assembly	\$13,340.00
2	S350-185-19-5	Plug Bellows Assembly	\$8,970.00 ea
1	S350-185-19-6	Upper Probe Bellows Assembly	\$11,565.00
1	S350-185-19-7	Lower Probe Bellows Assembly	\$11,565.00

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO. See Body

DEST AXC-613-W A1

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXX WILM, DE

ORIGINATOR

mka

1-C-C-C

BUYER

AMOUNT

\$27,470.00

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30913
(TWX 810-771-2871) TEL 803-725-8211 WU AUGUSTA GA)

DATE		
MO	DAY	YR
10	08	86

ORDER NO.

AXC 613-W

ORDER NUMBER AND EQUIP NO NUMBERS MUST BE SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

TO

Metal Bellows Corp.
200 Science Drive
Moorpark, CA 93021-8010
Attn: S. SauveFURNISH
PACKING

LIST

FOR EACH SHIPMENT

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

11/10/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DPM 4.
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DPM 4-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 11

E.I. 31 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
1	S999-350-19-4	Adapter Bellows Assembly (Spare)	\$13,340.00
1	S999-350-19-5	Plug Bellows Assembly (Spare)	\$8,970.00 ea
1	S999-350-19-6	Upper Probe Bellows Assembly (Spare)	\$11,565.00
1	S999-350-19-7	Lower Probe Bellows Assembly (Spare)	\$11,565.00
	1 Lot - Non-recurring Engineering		\$19,600.00
	1 Lot - Non-recurring Set-up		\$6,000.00

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

See Body

EXECUTED BY

A. M. Lawrence

ORIGINATOR

mk a

DEST

AXC-613-W A1

ISSUING POINT

XXXXXXSTA XA Wilm, GE

BUYER

AMOUNT
\$27,470.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO E.I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT. DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA GA1

DATE		
MO	DAY	YR
10	08	86

ORDER NO.	Alt 1
AXC 613W	

TO

Metal Bellows Corp.
200 Science Drive
Moorpark, CA 93021-8010
Attn: S. SauveFURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLACED
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

11/10/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF GOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-811 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11

BUYER IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

1 Lot - QA Documentation per
Section VIII, Para F @ N/CVENDOR TO BE ADVISED, PER THIS
REVISION QUANTITY CHANGES FROM 14
TO 12 UNITS.Per Spec. 3-613 Rev. 1 dated 07/02/86
attachee and made part of this order.

Previous Price	\$198,910.00
Alt. 1 Increase	\$27,470.00
New Total Price	\$226,380.00

This confirms verbal order placed 10/2/86
with S. Sauve
by A. M. Lawrence (Contract Buyer)Per Qte #04-0686-12-C23 dated 9/24/86
by S. SauveShip to:
Keller Technology Corp.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

See Body

DEST

AXC-613-W #1

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

1-C-C

BUYER

AMOUNT
\$27,470.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE A/B
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SA
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE -
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SC
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA GA)

DATE		
MO	DAY	YR
10	08	86

ORDER NO.
AXC 613V

TO

Metal Bellows Corp.
200 Science Drive
Moorpark, CA 93021-8010
Attn: S. SauveFURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLACED
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE WITH
INVOICEPlease mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

11/10/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC. H.
OPERATING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DO NOT CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

B-1 OF CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

232C Military Road
Tonowanda, NY 14150

TECHNICAL CONTACT: B. J. Etienne 302-366-2040

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

See Body

EXECUTED BY

A. M. Lawrence

ORIGINATOR

1-C-C.

DEST

AXC-613-W A1

ISSUING POINT

XX/PURKSTX/XX Wilm, DE

BUYER

AMOUNT
\$27,470.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO
CERTIFICATE NO 2139 WHICH AUTHORIZES
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-613
REV: 1
DATE: July 2, 1986
PAGE: 1

(C)	<u>EN Nos.</u>	<u>Qty</u>	<u>Description</u>
	S350-185-19-1	1	Canister Bellows Assembly
	S350-185-19-4	1	Adapter Bellows Assembly
	S350-185-19-5	2	Plug Bellows Assembly
	S350-185-19-6	1	Upper Probe Bellows Assembly
	S350-185-19-7	1	Lower Probe Bellows Assembly
	S999-350-19-1	1	Spare Canister Bellows Assembly
	S999-350-19-4	1	Spare Adapter Bellows Assembly
	S999-350-19-5	2	Spare Plug Bellows Assembly
	S999-350-19-6	1	Spare Upper Probe Bellows Assembly
	S999-350-19-7	1	Spare Lower Probe Bellows Assembly

I. GENERAL

A. Scope

This specification covers materials, dimensions, tolerances, welding and inspection procedures for bellows and flange assemblies shown above. These assemblies when installed will be part of and used to activate parts of a glass melter drain valve.

B. Function of Drain Valve Assembly

- (C) The Drain Valve Assembly will be used in a new Defense Waste Processing Facility (DWPF). This facility will process radioactive waste material for long term storage by converting it into a stable borosilicate glass form. The waste glass will be prepared in a glass melter whose life expectancy is approximately two years. At the end of this period the melter will be drained using the drain valve assembly and taken out of service.

C. Fabrication Quality

- (C) The bellows and flange assemblies must be manufactured to meet exacting quality standards. This requirement is dictated by the unique operating environment of the DWPF melter drain valve.
- (C) Once started up, the valve must be operated by remote control for a period of several years. There are no provisions to maintain or replace the valve during the operating life of the melter. The valve can be replaced only after the melter is shutdown and removed.

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-613
 REV: 1
 DATE: July 2, 1986
 PAGE: 2

D. Shipping Schedule

- (C) Time is of the essence, and the fabricator's quote is to be based on providing all parts by the required shipping dates.

II. EQUIPMENT NUMBER (EN), DRAWINGS AND QUANTITIES

- (C) A. The following detail parts, including Bill of Material items and quantities as shown below, forwarded for quotation purposes are to be deleted from this specification and replaced by new part numbers and quantities as listed under Section II.B:

<u>Assembly Quantity</u>	<u>Drawing</u>	<u>Revision</u>
2	D-189486	2
2	D-189487	2
2	D-189488	3
2	D-189489	3
2	D-189493	3
2	D-189494	4
2	D-199256	6

- B. The bellows fabricator is to fabricate detail parts shown below and assemble parts in accordance with assembly drawings shown. Total number of bellows assemblies has been reduced from 14 shown under Section II.A to the 12 shown below. All Bill of Material items indicated on these drawings are to be provided by the fabricator:

<u>EN No.</u>	<u>Qty Per Assy.</u>	<u>Qty Total</u>	<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
S350-185-19-1	1	1			
S999-350-19-1	1	1			
			W-816581	0	Canister Bellows Shipping and Handling Assembly
			D-816390	0	Canister Bellows Sh. 1
			D-811179	0	Canister Bellows Sh. 2

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-613
 REV: 1
 DATE: July 2, 1986
 PAGE: 3

<u>EN No.</u>	<u>Qty Per Assy.</u>	<u>Qty Total</u>	<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
S350-185-19-4	1	1			
S999-350-19-4	1	1			
			W-816578	0	Adapter Bellows Shipping and Handling Assembly
			D-816387	0	Adapter Bellows Sh. 1
			D-811176	0	Adapter Bellows Sh. 2
S350-185-19-5	2	2			
S999-350-19-5	2	2			
			W-816580	0	Plug Bellows Shipping and Handling Assembly
			D-816388	0	Plug Bellows Sh. 1
			D-811177	0	Plug Bellows Sh. 2
S350-185-19-6	1	1			
S999-350-19-6	1	1			
			W-817412	0	Upper Probe Bellows Shipping and Handling Assembly
			D-816389	0	Probe Bellows Sh. 1
			D-811178	0	Probe Bellows Sh. 2
S350-185-19-7	1	1			
S999-350-19-7	1	1			
			W-816579	0	Lower Probe Bellows Shipping and Handling Assembly
			D-816389	0	Probe Bellows Sh. 1
			D-811178	0	Probe Bellows Sh. 2

C = Changed
 4253W/ktg

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-613
REV: 1
DATE: July 2, 1986
PAGE: 4

Note that the bellows diameters shown on the drawings may be revised within minimum and maximum limits to correspond to the vendor's nearest standard bellows diameters needed to satisfy design requirements.

III. MATERIALS OF CONSTRUCTION

- (C) The materials of construction are to be as specified on the drawings under section entitled Bellows Design Parameters.

IV. TESTING REQUIREMENTS

- (C) Testing requirements are to be as specified on the drawings under section titled Non-Destructive Examination.

V. WELDING

- (C) Welding requirements are to be as specified on the drawings under section titled Bellows Design Parameters.

VI. PACKAGING

- (C) Packaging requirements are to be as specified on the drawings under section titled Packaging For Shipment.

(C) VII. SHIPPING INSTRUCTIONS

All bellows assemblies are to be shipped to the following address and marked "For Use on Du Pont Order AXC-6850-W".

Keller Technology Corporation
2320 Military Road
Tonawanda, NY 14150

VIII. SURVEILLANCE (INSPECTION)

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each surveillance is required by telephoning (302) 366-3601.

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- (C) 2. When major components or service are obtained from subvendors, the QA FR may check these items at the point of manufacture. It is the fabricator's responsibility to include Du Pont surveillance and notification requirements in suborders.

(C) B. Fabricator's QA Manual/Procedure Requirements

- (C) 1. The fabricator shall have, in place, and functioning a material control procedure which addresses the control, segregation, identification, and use of the material to be used, including welding consumables. Special care should be taken with Du Pont furnished material.
- (C) 2. The fabricator shall have, in place, and functioning a procedure(s) which address special processes. Special processes are defined as: welding, heat treatment (if applicable), nondestructive examination, and testing. The procedure(s) shall address: using written procedures for operations to be performed and the qualification of personnel.
- (C) 3. The fabricator shall have, in place and functioning a procedure for the calibration of measuring and test equipment. Calibration standards shall be traceable to nationally recognized standards.
- (C) 4. The fabricator may utilize their own procedure for the control of nonconformances or refer any nonconformances to the QA FR for resolution.
5. A Quality Control Manual which satisfies the ASME Code, Section VIII, Division 1, Appendix 10 will also satisfy the intent of Paragraphs 1 through 4 above.

C. Prefabrication Surveillance Meeting

- (C) The first visit will be initiated by S. B. Hicks, QA Engineer, (302) 366-2116. The inspection and specification requirements will be reviewed with fabricator's manufacturing and quality control personnel. A tentative schedule of future inspection visits will be established at this meeting.

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D. Schedule

- (C) Fabricator shall request inspection at the following points:
1. Preliminary Visit - After material has been received.
 - (C) 2. Intermediate Visit - To witness initial liquid penetrant examinations and check detail parts.
 - (C) 3. Final Visit - To witness assembly and testing (joint inspection).

E. Instructions

The following inspections will be performed by the QAFR:

- (C) 1. Prefabrication Surveillance Meeting
- a. Discuss, in detail, specification and drawing requirements with the fabricator.
 - b. Discuss the requirements of the surveillance specification.
 - c. Investigate the proposed sequence of fabrication and adjust the surveillance schedule to fit that sequence.
- (C) 2. Preliminary Visit - After material has been received.
- a. Review the procedures the fabricator proposes to use on this order and ensure that they are adequate.
 - b. Assure that the proper welding procedures are being employed.
 - c. Assure that welders are being qualified to established welding procedures.
 - d. Assure that the liquid penetrant examination procedure to be used is in accordance with the requirements of the ASME Code, Section V.
 - e. Assure that the radiographic examination procedure to be used is in accordance with the requirements of the ASME Code, Section V.

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- f. Review the fabricator's material control system, assuring it is in accordance with the written procedures and judging the adequacy of the system to prevent the use of Du Pont furnished material on other work.

(C)

- 3. Intermediate Visit - To witness initial liquid penetrant examinations and check detail parts.
 - a. Review the fabricator's Non-Destructive Examination (NDE) procedures assuring they are in accordance with specified requirements.
 - b. Review the qualifications of the NDE personnel assuring they have been properly qualified.
 - c. Witness the initial liquid penetrant examinations assuring that procedures are being followed and examinations are performed by qualified personnel. Review and initial the test certificates for this examination. If the testing was satisfactorily performed, allow the fabricator to proceed with the remaining root-pass liquid penetrant examinations as long as test certification is provided for each test. Otherwise, witness all root-pass examinations.
 - d. Review any machining or welding in process.
 - e. Witness any dimensional inspections of detail parts being performed at this time.
 - f. Review specified finishes to assure they are as specified.
 - g. Assure that proper materials are being used.

(C)

- 4. Final Visit - To witness assembly and testing (Joint Inspection).
 - a. Witness the final liquid penetrant examination of all welds.

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- b. Review and interpret all radiographs pertaining to the bellows, noting the source, source size, film, penetrometer used, and the qualifications of the radiographer. Initial the radiographic reader sheets for all radiographs reviewed.
- c. Witness the testing (joint inspection) of the bellows assembly. Note any obvious handling damage to the bellows assemblies.
- d. Visually check the assembly for harmful distortion after the tests.
- e. Witness preparation of the bellows for shipment including coating of machined surfaces to prevent rust, sealing of openings, insertion of bellows shipping spacer bolts to prevent extension or compression during shipment and the crating of each assembly for site handling.
- f. Apply acceptance tags when the bellows are released for shipment.

F. Documentation

- 1. The fabricator shall prepare a documentation inventory transmittal sheet (listing all documents and number of pages) and attach to each set of documentation.
- 2. Each sheet of documentation shall list Du Pont P.O. number, equipment identification, and be consecutively numbered.
- 3. The Du Pont QAFR shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.

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(C)

4. The fabricator shall forward documentation at time of shipment as follows:

- a. One complete set (including signed documentation inventory transmittal sheet) to be included with shipment and marked as follows:

ATTN: Receiving Supervisor - Construction
Savannah River Plant

- b. Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

Attn: Construction Material Expeditor - Building
CAB/CS

- c. One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108

Attn: S. B. Hicks

5. The Du Pont QA/R shall verify transmittal of documents per the general conditions of order and state verification in night message.

(C)

6. The supplier shall submit documentation as specified on drawings. This documentation shall also include items listed below.

- a. Certification for the pressure test of the bellows

- b. Liquid penetrant logs

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- c. Liquid penetrant material certifications
- d. Radiographic logs
- e. Radiographic reader sheets

C = Changed
4253W/ktg

N = New

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YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING CONSTRUCTION DIMENSION DRAWINGS IN WEEKS AFTER RECEIPT OF PURCHASE ORDER.

- A. One reproducible is required for Du Pont design and construction purposes.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

(C)	Plant	Savannah River
	Project	9S1780
	Du Pont Order No	AXC-613-W
	Appropriate EN Numbers	S350-185-19-1, S999-350-19-1
		S350-185-19-4, S999-350-19-4
		S350-185-19-5, S999-350-19-5
		S350-185-19-6, S999-350-19-6
		S350-185-19-7, S999-350-19-7

- C. The following information is required:

Layout and orientation
Overall dimensions
Mounting or foundation dimensions
Connection locations

Fabrication is released upon receipt of purchase order.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (131) Augusta, GA 30913
(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA

DATE		
MO	DAY	YR
4	15	87

ORDER NO.
AXC Alt 4 725W

VC: 07261

TO

(615) 361-6600
Wright Industries, Inc.
707 Spence Lane
P. O. Box 100426
Nashville, TN 372100426

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLACED
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICE

Please mail 2 copies of your invoice
to the above address
ATTN: Accounts Payable Division

Please Furnish Materials and or Services Subject to Conditions and Instructions Listed on OSR 1-85

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

05/15/87

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

MODIFY ORDER IN PART, AS PER DU PONT'S DRAWING
W-807737, REV. #15, AND ATTACHED REVISED SPECIFICA-
TION (SEE SUMMARY OF CHANGES, PAGE #AA-2).

INCREASE PER THIS MODIFICATION AMOUNTS TO \$3,444.00
AS PER VENDOR'S LETTER DATED 4/3/87.

1	S350-185-10-3	Anchor - Flanges	+ \$1,720.
1	S999-350-10-3	Anchor - Flanges	+ \$1,720.

Per Spec. 3-725 Rev. 4 dated 04/10/87
attached and made part of this order.

TECHNICAL CONTACT: J. Scafaria 302-366-4510

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

PREVIOUS TOTAL PRICE - \$59,816.00
ALT. #4 INCREASE - \$ 3,440.00
NEW TOTAL PRICE - \$63,256.00

PER QUOTE #02-2000807-04 DATED 4/3/87 BY D. MARSHALL.

SHEET

FINAL

PRIORITY RATING ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

DEST

AXC-725-W A4

EXECUTED BY

A. M. Lawrence
ISSUING POINT
XXXXXXXXXX Wilm, DE

ORIGINAL

BUYER

AMOUNT

9S1780
3-725

clb

1-0-0-

\$1.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER

PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO. 114 WHICH AUTHORIZES
POINT DE NEMOURS COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECT TO THE
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT. DO NOT INSURE SHIPMENT.

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DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR ANCHOR FLANGES FOR TOP HEAD COMPONENTS

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SUMMARY OF CHANGES PER REVISION 1

(Reference memo and revised drawings to Wright Industries dated 8/4/86)

187870, Rev. 10 Nozzle Flange

- Changed interference fit in Note 5.

188679, Rev. 15 Feed Tube Flange

188681, Rev. 30 Feed Tube Flange

- Added 3/4" diameter dowel, locating dimensions, Datums A & B and notes covering interference fit and true position tolerances.
Added 3/4" diameter hole and associated information to 188681.

188689, Rev. 7 Dowel Details

- Corrected "Y" dimension for 188689-D.

188694, Rev. 26 TV Flange

- Relocated dimensions and changed tolerances for two 3/4" diameter dowels and added Datum A. Changed interference fit in Note 5.

188464, Rev. 16 Gasket

198918, Rev. 1 Gasket

- Added alternate S2 Code

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SUMMARY OF CHANGES PER REVISION #2

W-807736, Rev. 7, Anchor Flange Mounting

W-807737, Rev. 5, Anchor Flange Mounting

- Updated to reflect revised details and added Section T-T

D-187870, Rev. 15, Anchor Flange

- Added datums A & B and replaced tolerances with Note 7 covering true position and added corner cut-off for -C.

(Ref. Memo's DV0000507, 519 and revised drawings to Wright Industries, memo's dated 9/8 & 10/28/86.)

D-188679, Rev. 22, Anchor Flange

- Changed location and size of c'bore holes, dowel and stud locations for -A and added -B. (Does not change actual quantities.)

D-198918, Rev. 6, Gasket

- Changed location and size of holes for -A and added -E. (Does not change actual quantities.)

D-198919, Rev. 7, Shim

- Changed location and size of holes for -A and added -C. (Does not change actual quantities.)

(Ref. Memo DV0000497 and revised drawings to Wright Industries, memo dated 8/22/86.)

Other Specification Changes:

- Added Section IV.E., Alignment Fixture Assembly (new equipment)

SUMMARY OF CHANGES PER REVISION #3

1. Delete alignment fixture assembly Section I.C. and IV.E. and applicable drawings in Section III.C.

2. D-188694, Rev. 33 TV Flange

- Added shaded area at the .72 diameter holes and associated flatness and parallel requirements. Added chamfer.

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SUMMARY OF CHANGES PER REVISION #4

1. W-807737, Rev. 15 Anchor Flange Mounting

- Changed length of cap screws, B/M Item 1 and added washers B/M Item 5.

(Ref. Memo DV0000551 and revised drawings to Wright Industries, memo dated 3/23/87.)

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Timing

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Place order and release fabrication by May 25, 1986. The vendor will be released to procure material for all items with the order placement.

2. Shipping Dates

Following are the required shipping dates for fabricated items. In all cases, the item must be inspected and approved prior to shipping.

A. Canyon Melter Components - EN S350-185-10-3

Shipping date must be no later than May 15, 1987.

B. Spare Melter Components - EN S999-350-10-3

Vendor is requested to submit acceptable shipping date.

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I. IDENTIFICATION

A. Canyon Melter Components

EN S350-185-10-3

Anchor-Flanges

B. Spare Melter Components

EN S999-350-10-3

Anchor-Flanges

II. SCOPE

A. General

This specification covers requirements and procedures for fabricating, inspecting and shipping auxillary components for one glass melter vessel and one spare melter vessel.

B. Items by Vendor

The vendor is responsible for providing:

1. All material except that specifically shown to be provided by Du Pont.
2. All items categorized in I.A., I.B, & I.C. above and further enumerated in Section IV.C. & IV.D. following.
3. All ACME studs and nuts, shown on drawing D-188688 including parts A, B, C, D, E & G with the exception of F are to be provided by the vendor. These parts are to be procured specifically from;

Still-Walter Tool & Mfg. Co.
P.O. Box 464
Orangeburg, S.C. 29115
Tel (803) 534-8555

Note: Still-Water has the go/no-go gages noted on drawing.

4. Quality Assurance documents per Paragraph IX.E.

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C. Items Furnished by Du Pont

1. Du Pont shall furnish all items not listed in Section IV-C & IV-D but appear on drawings W807736 and W807737.

D. Work by Others

All items furnished on this order shall be shipped to another vendor for assembly with the melter vessel. This phase will verify mechanical fit-up of all components with the melter vessel prior to final shipment to the Savannah River Plant.

III. REFERENCE DOCUMENTS

A. Standards

Unless otherwise specified, work under this specification shall be performed in accordance with the following Du Pont Standards.

<u>Number</u>	<u>Latest Date</u>	<u>Title</u>
SW300M	Jan 1982	Austenitic Stainless Steel, Type 300 Series
SU2A	Jan 1983	Gaskets & Packings
SP3D	Dec 1982	Identification of Carbon Steel, Alum sst & Other Alloys

B. Drawings for Information

1. The following drawing is submitted for information only:

<u>Drawing No.</u>	<u>Rev.</u>	<u>Description</u>
W-732366	19	Melter Section

C. Drawings for Fabrication

Drawings are numerically listed below for control purposes, see following paragraphs for detail breakdown.

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Drawing No. Rev. (D)

W-807736	7
W-807737	15
D-187870	18
D-188464	16
D-188475	11
D-188679	22
D-188681	34
D-188688	11
D-188689	7
D-188694	33
D-198918	6
D-198919	7

(C)
 (C)

IV. DESCRIPTION OF COMPONENTS

A. Application

1. Melter Auxiliary Components

The components furnished on this order will monitor and control operation of a glass melter, which will be installed and operated in the future Defense Waste Processing Facility (DWPF), at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

The melter vessel consists of a water jacketed shell and top head, with nozzles for supporting the auxiliary components.

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary components installed.

The anchor flanges covered by this specification form the interface between the vessel nozzle and the removable components and enable the installation of electrical isolation material between the electrically hot component and the grounded vessel.

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B. Critical Fabrication Requirements

Remote Handling

Since the melting operation is radioactive, all equipment in the melt cell must be installed and removed remotely using an overhead crane. This includes the melter/frame assembly, all auxiliary components mounted on the melter top head nozzles, and the connecting service piping (jumpers). Each auxiliary component on the top head, and its respective jumper, must be interchangeable with operating spares, and with future (spare) melter vessels. This requires precise and exacting fits between all top head components and the respective mating dowel and flange assemblies.

C. EN S350-185-10-3 - Fabricated Equipment-Canyon Melter Components

C)

The vendor shall provide anchor flanges and attaching hardware shown on drawings W807736 and W807737 as specifically listed below, including B/M items 1 thru 5 on drawing W-807737. Items not listed below, but appearing on W807736 and W-807737 will be provided by Du Pont.

1. Vendor shall supply two (2) "B" nozzle flanges per drawing D-187870-B.
2. Vendor shall supply three (3) "C" nozzle flanges per Drawing D-187870-A.
3. Vendor shall supply two (2) "D" nozzle flanges per drawing D-188694-A.
4. Vendor shall supply one (1) "E" nozzle flange per drawing D-187870-C.
5. Vendor shall supply two (2) feed tube support flanges, one per drawing D-188679-A, and one per D-188679-B.
6. Vendor shall supply two (2) feed tube support flanges per drawing D-188681-A.
7. Vendor shall supply attaching hardware as follows:

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<u>Drawing No.</u>	<u>Description</u>	<u>Total No. Req'd.</u>
D-188464-D	Gasket	100
D-188475-B	Retaining Washer	50
D-188688-N	ACME Nut	20
D-198918-A	Gasket	1
D-198918-B	Gasket	2
D-198918-C	Gasket	10
D-198918-D	Gasket	4
D-198918-E	Gasket	1
D-198919-A	Shim	1
D-198919-B	Shim	2
D-198919-C	Shim	1

D. EN S999-350-10-3 - Fabricated Equipment - Spare Melter Components

Provide one duplicate set of equipment and attaching hardware as described in Section IV-C, Items 1 through 7.

V. MATERIAL

1. Certification

Certification is required for each lot and heat of 304L stainless steel and shall include both chemical analysis and mechanical properties.

2. Corrosion Evaluation

Corrosion evaluation of materials is not required.

3. Welding Rod

All 304L welds and 304L to Nitronic 50 welds shall be made with 308L welding rod. The vendor shall provide a system to ensure that only 304L rod is used.

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4. Identification

Mill ASME or ASTM ink markings shall remain to the extent possible on the fabricated items. Identification shall meet the contamination prevention requirements, Paragraphs V.D.3 and 4.

C. Material Control

The vendor shall establish a system to control 304L stainless steel, and the respective welding rods. This control shall include:

1. Segregation of this material from material for other jobs.

D. Contamination Prevention

1. Appropriate fabrication techniques shall be used to prevent contamination of 304L sst with carbon steel.
2. No galvanized steel parts, marking ink, or other substances containing zinc or other low melting materials shall be permitted to contact the stainless steel at any time during storage or fabrication.
3. Inks, labels, or other means of marking fabrication progress shall have a low chloride content (250 ppm maximum). Markings and labels shall be removed and the stainless steel surfaces thoroughly cleaned with alcohol, acetone, or other Du Pont approved solvents prior to assembly.
4. Acceptable marking materials are identified in Du Pont Specification SP3D, Table 1, Page 2.

VI. FABRICATION

A. Fabrication Quality

1. It is imperative that the auxiliary components of the OWPF melter covered in this specification be fabricated with the highest regard for cleanliness, material quality, workmanship, accuracy, and control. This is dictated by the remote handling requirements described in Paragraph IV.8.

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2. In all instances, no deviation from the requirements specified on the drawings will be permitted without prior consideration and agreement in writing by Du Pont Engineering.
3. In general, the components specified herein should be treated as instrument quality components.

B. Welding

1. Procedures

a. General

- 1) Surfaces to be welded must be made free of oxide by machining, grinding, or pickling.
- 2) Cleanliness is essential. The weld areas and adjacent areas and weld wire must be freed of all contaminants (marking materials, shop dirt, oil, abrasive materials, etc.) by grinding and solvent cleaning with clean wiper and solvent.
- 3) Weld only with the GTAW process using Du Pont-specified filler metal. All welds are to be continuous unless specified otherwise and shall be free of visible imperfections.
- 4) Where the inside or backside of the joint is accessible, the root must be back excavated to sound material as indicated by dye penetrant inspection.
- 5) Where the inside or backside of the joint is not accessible, the root must be protected by inert gas back-up.
- 6) The oxide on each bead must be removed (preferably by a flapper wheel) before depositing next bead.

b. Liquid Penetrant Examination

- 1) Liquid penetrant examination shall be in accordance with ASME Section VIII, Division 1, Mandatory Appendix VIII.

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- 2) Testing solutions shall have low contents of mercury, sulfur, halogens, and other low melting materials. All traces of solutions shall be removed and the surfaces solvent cleaned and dried, prior to deposition of additional weld metal and after final testing.
- 3) All welds shall be subjected to liquid penetrant examination as follows:
 - a) Root pass and cover pass of fillet welds and full penetration welds deposited from one side only. In cases where thick joints are involved, the root liquid penetrant examination may be deferred until the second or third pass.
 - b) Back chip and cover passes of all butt welds deposited from both sides, and other full penetration welds deposited from both sides.
 - c) Areas where temporary attachments were welded to parent metal.
- 4) Vendor personnel performing and interpreting liquid penetrant examinations shall be qualified as outlined in Section VIII, Division 1, ASME Code.

VII. NAMEPLATES

The vendor shall attach to each part an embossed or engraved plastic or stainless steel tag bearing the following information:

Project: 9S1780
Order: AXC-725-W
EN No.: S350-185-10-3 or S999-350-10-2 (as applicable)
Dwg. No.: (See Section IV-C)

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VIII. PREPARATION FOR SHIPMENT

All surfaces shall be properly protected from mechanical injury. Provide packaging to prevent damage from contaminants, and during handling and transit. This shall include:

- A. Sturdy wood crates.
- B. Provisions for handling with a forklift truck.

IX. SURVEILLANCE SPECIFICATION

A. Inspection

1. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required in accordance with the following instructions. A QAFR will contact you to schedule inspection visits. In the event that you are not contacted, notify Quality Assurance Engineering Field Administration at least five days before inspection is required by telephoning (302) 451-0200.
2. When major components or service are obtained from subvendors, the QAFR will inspect these items at the point of manufacture. It is the vendor's responsibility to include Du Pont inspection and notification requirements in sub-orders.

B. Vendor QA Manual/Procedure Requirements

1. The vendor shall have in-place and functioning procedures which provide for the control and use of materials for this order. The procedure should address as a minimum: control, issue, segregation and identification of all material and welding consumables.
2. The vendor shall have in-place and functioning procedures which provide for the calibration, control and use of measuring and test equipment.
3. The vendor shall use properly qualified welding procedures. Welders shall also be properly qualified. Welders and welding procedures shall be qualified in accordance with a nationally recognized standard, such

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
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as ASME Section IX or AWS D1.1. The vendor shall provide in the quotation which standard is applicable. The vendor shall also use qualified NDT procedures and NDT examiners.

C. Special Considerations

The dimensional requirements for parallelism and perpendicularity are the most critical aspects of this order.

D. First Visit

Prior to any shop fabrication, will be initiated by S. B. Hicks, Du Pont quality Assurance Engineer, 302-366-2116. The inspection and specification requirements will be reviewed with vendor's manufacturing and quality control personnel. A tentative schedule of future inspection visits will be established. Du Pont Quality Assurance engineering and design will attend this meeting.

E. Inspection Schedule (Vendor to request inspection at the following points)

1. Preliminary - When the machining begins.
2. Final - To witness dimensional inspection, fit-up & functional check and final liquid penetrant inspection and shipping provisions. (Joint inspection with QAFR and Design)

Inspection Instructions (The following inspections will be performed by the QAFR)

1. Preliminary - When the machining begins.
 - 1.1 Confirm the use of the proper materials of construction by reviewing mill test reports and checking mill marking of material.
 - 1.2 Review welding procedures, NDT procedures, welder qualifications and NDT examiner qualifications. Assure they are in accordance with applicable standards or requirements.
 - 1.3 Perform a visual inspection for mill markings on material and a magnet check of material.

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1.4 Witness initial dimensional inspection.

2. Final - To witness dimensional inspection, fit-up & functional check:

2.1 All dimensions with specific tolerances indicated (closer than standard drawing tolerances) and those specified with three place decimals shall be verified by measurement.

2.2 Verify that the part's flatness. Perpendicularities, straightness, parallelisms, finishes, and concentricities are as specified on drawings.

2.3 Visually inspect all surfaces including welds which are to be free of pits, cracks, gauges, or other flaws which might trap materials.

2.4 Witness the final liquid penetrant inspection of each weld. Assure the procedures are followed and the examiner is properly qualified.

2.5 Review the proposed details of preparation for shipping and provisions for handling. Assure crates are skidded for forklift handling.

F. Documentation

1. The manufacturer shall prepare a documentation inventory transmittal sheet (listing all documents and numbers of pages) and attach to each set of documentation.
2. Each sheet of documentation shall list Du Pont P.O. number, equipment identification, and be consecutively numbered.
3. The Du Pont QA/R shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.

SPECIFICATION

PLANT: SAVANNAH RIVER
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4. The manufacturer shall forward documentation at time of shipment as follows:

- One complete set (including signed documentation inventory transmittal sheet) to be included with shipment and marked as follows:

Attn: Receiving Supervisor - Construction
Savannah River Plant

- Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction Material Expeditor - Building
CAB/CS

- One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: W. D. Becker

5. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.

6. Documentation includes:

- Mill Test certificates.
- Certifications for marking and NDT materials.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
TWX 510-771-2671 TEL 803-725-6211 WU AUGUSTA GA)

DATE		
MO	DAY	YR
3	18	87

ORDER NO.

AXC 1992w

VC: 05332

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP NO. NUMBERS MUST BE PLAINED
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address
ATTN: Accounts Payable DivisionMetal Bellows Corporation
200 Science Drive
Moorepark, CA 93021

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on USR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD

OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER

DOD IS CERTIFIED FOR NATIONAL DEFENSE

SEE ORDER DPS REGULATION 1

E. I. du Pont de Nemours & Co. is a U.S. GOVERNMENT CONTRACTOR

08/10/87

SEE BELOW: ☒☐

CASH TERMS

VIA

FOB

1/2-10, N30

Moorepark, CA

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
POUR SPOUT BELLOWS			
2	S999-350-20-1	Assembly - Actuator Bellows (Spare)	\$10,197.00 each
2	S999-350-20-2	Assembly - Lower Adapter Bellows (Spare)	\$13,297.00 each
2	S999-350-20-3	Assembly - Upper Adapter Bellows (Spare)	\$16,547.00 each
1 Lot		Non-Recurring Eng.	\$1,050.00
Per Spec. 3-1992 dated 01/30/87 attached and made part of this order.			
Quality surveillance by a Du Pont representative of items furnished on this order is required. If sur- veillance details are not in the attached specifi- cation, you will receive a letter shortly describ- ing them. The Du Pont representative will contact you to schedule surveillance visits. If not con- tacted, please notify (by telephone) at least five days before surveillance is required:			

SHEET ☐ FINAL ☐		PRIORITY RATING ACM EXECUTED BY	REQUISITION NUMBERS
MARK AND SHIP AS FOLLOWS:			864090 c1b
TO E. I. DU PONT DE NEMOURS & COMPANY			3-1992
ORDER NO.	Construction Project Manager	EXECUTED BY	ORIGINATOR
DEST	Central Shops Receiving	A. M. Lawrence	1-0-0-
	AXC-1992-W	ISSUING POINT	BUYER
		XXXXXXX Wilm, DE	AMOUNT
ITEM NO.	Charge	GENERAL LEDGER & COST CODE	\$81,132.00
	(SRP)	Cost Code :	\$.00
		661W-03-016	
DIRECT ALL INQUIRIES TO THE ABOVE BUYER			
PURCHASE EXEMPT FROM SOUTH CAROLINA SALE AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 119 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION			
APPROVED FOR DU PONT			

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
TWX 310-771-2671 TEL 303-725-8211 WU AUGUSTA GA

DATE		
MO	DAY	YR
5	18	87

ORDER NO.

AXC 1992W

VC: 05332

TO

Metal Bellows Corporation
200 Science Drive
Moorepark, CA 93021

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE PRINTED
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD.

STANDARD PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER

DOD CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

DOD CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

08/10/87

SEE BELOW:

XX

B

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

E. I. du Pont de Nemours & Co., Inc.
Engineering Department
Quality Assurance & Materials Management Engrg.

(302) 451-0200

When major components or services are obtained from subvendors and/or suppliers, the Du Pont representative will inspect these items at the point of manufacture. It is the prime vendor's responsibility to include Du Pont surveillance and notification requirements in sub-orders and to notify Du Pont at the above address upon placement of such orders.

The vendor or subvendor is obligated to perform all activities in accordance with all requirements of the purchase order, regardless of whether the Du Pont representative elects to perform or waive any surveillance. The performance of surveillance by the Du Pont representative does not relieve the vendor or subvendor of responsibility for, among other things, meeting specification, quality, work-

SHEET

FINAL

PRIORITY RATING ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

864090

cib

3-1992

ORDER NO.

Construction Project Manager

EXECUTED BY

A. M. Lawrence

ORIGINATOR

1-0-0-0

DEST

Central Shops Receiving

ISSUING POINT

XXXXXXXXX milm. DE

BUYER

AMOUNT

\$1.00

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 3139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
TWX 310-771-2871 TEL 803-725-8211 WU AUGUSTA GA)

VC: 05332

TO

Metal Bellows Corporation
200 Science Drive
Moorepark, CA 95021

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
5	18	87

ORDER NO.

AXC 1992W

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOE IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FULFILL THIS ORDER
DOE IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11

E. I. du Pont de Nemours & Co. is a corporation organized under the laws of the State of Delaware and is a subsidiary of E. I. du Pont de Nemours & Co. Inc.

08/10/87

SEE BELOW: A

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

manship, and performance requirements.

Promised Shipping Date:

Final Drawings: 6/8/87

Ship: 10/6/87

Vendor to submit required drawings, manuals, etc.
and/or shipping instructions for Du Pont furnished
material immediately to:"Vendor Print Center 52S (P-364090)"
Engineering Department, Design Division,
P. O. Box 6090, Newark, Delaware 19714-6090
Express or UPS: 655 Paper Mill Road
Newark, Delaware 19711-7515

TECHNICAL CONTACT: B. J. Etienne 302-366-2040

TOTAL FIRM PRICE \$81,132.00

Per vendor quote N04-1487-02-035 dated 3/4/87 by Sue Sauve

NOTE: Accounts Payable (SRP)

All costs incurred for this order to be charged to

SRP (Plant) Cost Code: 661W-03-016

Verbal order placed 5/18/87 with Sue Sauve by Nancy CUsick

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

864070

C10

3-1992

ORDER

NO

EXECUTED BY

ORIGINATOR

Construction Project Manager

A. M. Lawrence

1-0-0-0

DEST

Central Shops Receiving

ISSUING POINT

BUYER

AMOUNT

AXC-1992-W

XXXXXX Wilm, DE

\$.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYERPURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 119 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

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<u>Engg. No. (EN)</u>	<u>Qty</u>	<u>Description</u>
S999-350-20-1	2	Spare Actuator Bellows Assembly
S999-350-20-2	2	Spare Lower Adapter Bellows Assembly
S999-350-20-3	2	Spare Upper Adapter Bellows Assembly

I. GENERAL

A. Scope

This specification covers materials, dimensions, tolerances, welding and inspection procedures for spare bellows and flange assemblies shown above. These are to replace bellows assemblies purchased through Keller Technology Corporation on Project 9S1780, (AXC-8901) for installation in the DWPF Pour Spout Bellows Assembly and are more specifically described by Du Pont BPF #218813 and Metal Bellows Corporation Job No. W19814.

B. Function of Pour Spout Bellows Assembly

The Pour Spout Bellows Assembly will be used in a new Defense Waste Processing Facility (DWPF). This facility will prepare radioactive waste material for long-term storage by converting it into a stable borosilicate glass form. The waste glass will be prepared in a glass melter and slowly poured through the Pour Spout upper and Lower Adapter Bellows Assembly into steel canisters for long-term storage.

C. Fabrication Quality

The bellows assemblies described above must be identical in every respect and must meet the same exacting quality standards as those previously purchased by Du Pont through Keller Technology Corporation in accordance with Du Pont drawings described in Section II.

The requirement for fabricating these bellows assemblies "identical in every respect" to those purchased by Du Pont through Keller Technology Corporation as described in Du Pont BPF #218813 is dictated by the use intended (see Section I.B. above) and the fact that these bellows assemblies will be fitted into an existing Pour Spout Bellows Assembly and will be required to function identical

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to those previously supplied. In addition, once the Pour Spout Bellows Assembly is placed into service it must be operated by remote control for several years. Although the Pour Spout Bellows Assembly can be replaced remotely, it is imperative that the assembly satisfactorily operate for at least two years.

D. Shipping Schedule

Time is of the essence, and the fabricator's quote is to be based on providing all parts by the required shipping dates.

II. EQUIPMENT NUMBER (EN), DRAWINGS & QUANTITIES

A. The bellows fabricator is to fabricate detail parts referenced below and assemble parts in accordance with assembly drawings shown. All Bill of Material items indicated on these drawings are to be provided by the fabricator:

<u>Engg. No. (EN)</u>	<u>Qty Total</u>	<u>Drawing No.</u>	<u>Rev.</u>	<u>Description</u>
S999-350-20-1	2	D-815274	8	Actuator Bellows, Sh. 1
	--	D-811172	10	Actuator Bellows, Sh. 2
	--	W-816001	1	Actuator Bellows Shipping & Handling Assembly
S999-350-20-2	2	D-815273	0	Lower Adapter Bellows, Sh. 1
	--	D-811171	5	Lower Adapter Bellows, Sh. 2
	--	W-816014	1	Lower Bellows Shipping & Handling Assembly
S999-350-20-3	2	D-815272	3	Upper Adapter Bellows, Sh. 1
	--	D-811173	6	Upper Adapter Bellows, Sh. 2

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<u>Engg. No. (EN)</u>	<u>Qty Total</u>	<u>Drawing No.</u>	<u>Rev.</u>	<u>Description</u>
--		W-816015	2	Upper Bellows Shipping & Handling Assembly

III. MATERIALS OF CONSTRUCTION

The materials of construction are to be as specified on the drawings under section titled "Bellows Design Parameters".

IV. TESTING REQUIREMENTS

Testing requirements are to be as specified on the drawings under section titled Non-Destructive Examination.

V. WELDING

Welding requirements are to be as specified on the drawings under section titled Bellows Design Parameters.

VI. PACKAGING

Packaging requirements are to be as specified on the drawings under section titled Packaging For Shipment.

VII. SHIPPING INSTRUCTIONS

All bellows assemblies are to be shipped to the following address and marked "DWPF Pour Spout Bellows Assembly replacement bellows, Project 9S1780":

E. I. du Pont de Nemours & Company
Construction Project Manager
Central Shops Receiving
Dunbarton, SC 29808

Attn: Material Expediter - Construction
Building TC-1

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VIII. SURVEILLANCE (INSPECTION)

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each surveillance is required by telephoning (302) 451-0200.
2. When major components or service are obtained from subvendors, the QAFR may check these items at the point of manufacture. It is the fabricator's responsibility to include Du Pont surveillance and notification requirements in suborders.

B. Fabricator's QA Manual/Procedure Requirements

1. The fabricator shall have, in place, and functioning a material control procedure which addresses the control, segregation, identification, and use of the material to be used, including welding consumables. Special care should be taken with Du Pont furnished material.
2. The fabricator shall have, in place, and functioning a procedure(s) which address special processes. Special processes are defined as: welding, heat treatment (if applicable), nondestructive examination, and testing. The procedure(s) shall address: using written procedures for operations to be performed and the qualification of personnel.
3. The fabricator shall have, in place and functioning a procedure for the calibration of measuring and test equipment. Calibration standards shall be traceable to nationally recognized standards.
4. The fabricator may utilize their own procedure for the control of nonconformances or refer any nonconformances to the QAFR for resolution.
5. A Quality Control Manual which satisfies the ASME Code, Section VIII, Division 1, Appendix 10 will also satisfy the intent of Paragraphs 1 through 4 above.

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C. Prefabrication Surveillance Meeting

The first visit will be initiated by S. B. Hicks, QA Engineer, (302) 366-2116. The inspection and specification requirements will be reviewed with fabricator's manufacturing and quality control personnel. A tentative schedule of future inspection visits will be established at this meeting.

D. Schedule

Fabricator shall request inspection at the following points:

1. Preliminary Visit - After material has been received.
2. Intermediate Visit - To witness initial liquid penetrant examinations and check detail parts.
3. Final Visit - To witness assembly and testing (joint inspection).

E. Instructions

The following inspections will be performed by the QA/R:

1. Prefabrication Surveillance Meeting
 - a. Discuss, in detail, specification and drawing requirements with the fabricator.
 - b. Discuss the requirements of the surveillance specification.
 - c. Investigate the proposed sequence of fabrication and adjust the surveillance schedule to fit that sequence.
2. Preliminary Visit - After material has been received.
 - a. Review the procedures the fabricator proposes to use on this order and ensure that they are adequate.
 - b. Assure that the proper welding procedures are being employed.
 - c. Assure that welders are being qualified to established welding procedures.

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- d. Assure that the liquid penetrant examination procedure to be used is in accordance with the requirements of the ASME Code, Section V.
 - e. Assure that the radiographic examination procedure to be used is in accordance with the requirements of the ASME Code, Section V.
 - f. Review the fabricator's material control system, assuring it is in accordance with the written procedures and judging the adequacy of the system to prevent the use of Du Pont furnished material on other work.
3. Intermediate Visit - To witness initial liquid penetrant examinations and check detail parts.
- a. Review the fabricator's Non-Destructive Examination (NDE) procedures assuring they are in accordance with specified requirements.
 - b. Review the qualifications of the NDE personnel assuring they have been properly qualified.
 - c. Witness the initial liquid penetrant examinations assuring that procedures are being followed and examinations are performed by qualified personnel. Review and initial the test certificates for this examination. If the testing was satisfactorily performed, allow the fabricator to proceed with the remaining root-pass liquid penetrant examinations as long as test certification is provided for each test. Otherwise, witness all root-pass examinations.
 - d. Review any machining or welding in process.
 - e. Witness any dimensional inspections of detail parts being performed at this time.
 - f. Review specified finishes to assure they are as specified.
 - g. Assure that proper materials are being used.

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DATE: January 30, 1987
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4. Final Visit - To witness assembly and testing (Joint Inspection).
 - a. Witness the final liquid penetrant examination of all welds.
 - b. Review and interpret all radiographs pertaining to the bellows, noting the source, source size, film, penetrometer used, and the qualifications of the radiographer. Initial the radiographic reader sheets for all radiographs reviewed.
 - c. Witness the testing (joint inspection) of the bellows assembly. Note any obvious handling damage to the bellows assemblies.
 - d. Visually check the assembly for harmful distortion after the tests.
 - e. Witness preparation of the bellows for shipment including coating of machined surfaces to prevent rust, sealing of openings, insertion of bellows shipping spacer bolts to prevent extension or compression during shipment and the crating of each assembly for site handling.
 - f. Apply acceptance tags when the bellows are released for shipment.

F. Documentation

1. The fabricator shall prepare a documentation inventory transmittal sheet (listing all documents and number of pages) and attach to each set of documentation. This document package shall consist of modifying drawings included in Du Pont BPF #218813 (Metal Bellows Corporation Job No. W19814) by adding another block on drawings and other document sheets to show Savannah River Plant, Du Pont Project, Du Pont Purchase Order Number and appropriate Equipment Identification Number (EN No.)
2. The Du Pont QAFR shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.

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3. The fabricator shall forward documentation at time of shipment as follows:
 - a. One complete set (including signed documentation inventory transmittal sheet) to be included with shipment.
 - b. Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Engineering Department
Louviers Bldg. 33W39
Wilmington, DE 19898

Attn: B. J. Etienne
 - c. One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108

Attn: S. B. Hicks
4. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.
5. The supplier shall submit documentation as specified on drawings. This documentation shall also include items listed below.
 - a. Certification for the pressure test of the bellows
 - b. Liquid penetrant logs
 - c. Liquid penetrant material certifications

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PROJ: 864090
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REV:
DATE: January 30, 1987
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- d. Radiographic logs
- e. Radiographic reader sheets

THE VENDOR SHALL ATTACH TO EACH PIECE OF EQUIPMENT AN EMBOSSED OR ENGRAVED PLASTIC OR STAINLESS STEEL TAG BEARING THE DU PONT ORDER NUMBER AND ENGINEERING NUMBER AS INDICATED.

SPECIFICATION

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PROJ: 864090
SPEC: 3-1992
REV:
DATE: January 30, 1987
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YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING CONSTRUCTION DIMENSION DRAWINGS IN WEEKS AFTER RECEIPT OF PURCHASE ORDER.

- A. One reproducible is required for Du Pont design and construction purposes.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

Plant	Savannah River
Project	864090
Du Pont Order No	AXC-1992-W
Appropriate EN Numbers	As Applicable

- C. The following information is required:

- Layout and orientation
- Overall dimensions
- Mounting or foundation dimensions
- Connection locations

Fabrication is released upon receipt of purchase order.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001
VC: 06923

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA 30913
(TWX 810-771-2671) TEL 803-728-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
7	13	88

ORDER NO.	Alt 2
AXC 2183W	

(716) 693-3840
Keller Technology
2320 Military Road
P. O. Box 103 (Buffalo 14217)
North Tonawanda, NY 14150

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Material and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SDC IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER. DD-6-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11.	6-11-81 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1
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CASH TERMS	VIA	FOR
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ITEM NO.	QUANTITY	DESCRIPTION	PRICE
		OFF-GAS FILM COOLERS	
		THIS ALTERATION IS TO COVER DRAWING CHANGES AS SUMMARIZED ON PAGE AA.	
		Per Spec. 3-2183 Rev. 2 dated 06/14/88 Pages AA, A, 1-18 attached and made part of this order.	
		TECHNICAL CONTACT: J. Scafaria 302-366-4510	
		ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.	
		Previous Price \$109,521.00	
		Alt 2 Increase \$ 977.00	
		New Total Firm Price \$110,498.00	
		Per vendor quote #SO 4623 dated 7/11/88 by Frank Steinbruckner	

MARK AND SHIP AS FOLLOWS:
TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.	AXC-2183-W A2
DEST	

PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
EXECUTED BY R. L. Donall	951780 clb 3-2183
ISSUING POINT	ORIGINATOR
XXAUGUSTA, GA. Wilm, DE	1-0-0-C
	BUYER AMOUNT
	\$.00

ITEM NO.	GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

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SUMMARY OF CHANGES PER REV. #1

1. W-818428, Rev. 3 Off Gas Film Cooler Assembly
W-818429, Rev. 3 Back-Up Off Gas Film Cooler Assembly
 - Changed B/M Items 1 & 2 from "O" rings to "C" rings.
2. Added C-ring spares EN S999-350-50-55 and EN S999-350-50-56 (see Page 6).

(D)

SUMMARY OF CHANGES PER REV. #2

1. W-818428, Rev. 4 - Off Gas Film Cooler Assembly
W-818429, Rev. 4 - Back-Up Off Gas Film Cooler Assembly
 - Changed clip part number, Item 3 in Note 1.
2. D-823784, Rev. O
D-823787, Rev. O
 - This is to note that Rev. 1 was voided. Drawings remain Rev. O. Groove dimensions were not required to be revised.

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DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR OFF-GAS FILM COOLERS

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Timing

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Place order and release fabrication by May 15, 1987. The vendor will be released to procure material for all items with the order placement.

2. Shipping Dates

Following are the required shipping dates for fabricated items. In all cases, the item must be inspected and approved prior to shipping.

- a. First Priority - Required for the Canyon Melter:

<u>EN No.</u>	<u>Description</u>	<u>Shipping Date</u>
S350-185-15-40	Off-Gas Film Cooler	9/30/87
S350-185-15-50	Back-Up Off Gas Film Cooler	9/30/87

- b. Second Priority - Required for the Spare Melter:

The vendor shall quote the shipping date for EN S999-350-150-40 and EN S999-350-15-50 in weeks after the order is placed.

- c. Third Priority - Required for Operating Spares:

The vendor shall quote the shipping date for EN S999-350-50-45 and EN S999-350-50-50 in weeks after the order is placed.

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I. IDENTIFICATION

A. Canton Melter Components

<u>Engg. No.</u>	<u>Description</u>	<u>Qty</u>
S350-185-15-40	Off-Gas Film Cooler	1
S350-185-15-50	Back-Up Off-Gas Film Cooler	1

B. Spare Melter Components

The following is a duplicate set of Items 1 & 2.

S999-350-15-40	Off-Gas Film Cooler	1
S999-350-15-50	Back-Up Off-Gas Film Cooler	1

C. Operating Spares

The following is a duplicate set of Items 1 & 2.

S999-350-50-45	Off-Gas Film Cooler	1
S999-350-50-50	Back-Up Off-Gas Film Cooler	1

II. SCOPE

A. General

This specification covers requirements and procedures for fabricating, inspecting and shipping gas film coolers for use in the radioactive glass melter vessel which will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant near Augusta, Georgia.

B. Film Cooler Operation

During the operation of the melter, the vapors produced above the molten liquid are continuously being drawn off through the off-gas system. The primary purpose of the off-gas film coolers is to reduce particle deposition at the entrance to the melter off-gas lines. The design of these coolers is based on the introduction of a film of cooler air which does not mix well with the melter off-gas, therefore, producing a boundary layer along the inside wall of the off-gas line. This reduces the chance of splatter from the liquid melt and

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vapor particles within the gas effluent from adhering to the inside wall of the off-gas line. The melter has an off-gas line for normal operation and a back-up off-gas line that is used if problems occur. The difference in the film cooler designs is due to the change in operating conditions when the back-up off-gas system is in use.

C. Critical Fabrication Requirements--Remote Handling

Because the melting operation is radioactive, all equipment associated with the melter must be handled remotely using an overhead crane. To provide this capability, the nozzle flanges on the top of the melter are fabricated with positioning dowels that mate with the film cooler flanges as well as other associated flange assemblies. Precise and exacting fits are necessary which impose additional needs for critical dimensional requirements. The reference temperature for dimensions and tolerances is 68°F.

III. REFERENCE DOCUMENTS

A. Standards

Unless otherwise specified, work under this specification shall be performed in accordance with the following Du Pont Standards:

<u>Number</u>	<u>Latest Date</u>	<u>Title</u>
SP3D	Dec. 1982	Identification of Carbon Steel, Aluminum, Stainless Steel, and Other Alloys
SW33W	Feb. 1984	Welding Nickel, Monel, Inconel, and Copper-Nickel Sheet and Plate with the Direct Current GTAW Process
SW33.1W	Jan. 1985	Welding Nickel, Monel, Inconel, and Copper-Nickel Sheet and Plate with the Direct Current GTAW Process

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<u>Number</u>	<u>Latest Date</u>	<u>Title</u>
SW33.2	Sept. 1980	Welding Nickel, Monel, Inconel, and Copper-Nickel Pipe with the Direct Current GTAW Process
SW6W	Sept. 1985	Welding Distortion Control, Heat Straightening & Shaping

B. Drawings for Fabrication

	<u>Drawing No.</u>	<u>Rev.</u>
(C)	W-818428	4
(C)	W-818429	4
	D-815460	0
(C)	D-823784	0
	D-823785	0
	D-823786	0
(C)	D-823787	0

IV. DETAIL REQUIREMENTS & DESCRIPTION OF COMPONENTS

A. Work Included

1. The film coolers shall be fabricated primarily from Inconel 690 material supplied by Du Pont through Keller Technology.

B. Submittals & Documentation Package

1. The supplier shall supply the following submittals at the appropriate times.
 - a. Fabrication Schedules
 - b. Weld Detail Drawings
 - c. Weld Maps & Weld Procedure
 - d. Written Material & Quality Control Procedures
 - e. Shipping Procedure which detail preparation for shipment and shipment to jobsite

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- f. Recommendations for long-term storage at the plant site
 - g. Final "as built" critical dimensions.
2. The supplier shall provide the following items in the Documentation Packages at final inspection and for shipment as detailed in Paragraph XI.
- a. Certified material test reports on non-Du Pont supplied material.
 - b. Major repair reports (if required).
 - c. Radiograph examination and verification reports, including radiograph reader sheets.
 - d. Liquid penetrant examination logs.
 - e. Dimension/tolerance inspection and verification.

C. Fabricated Equipment - Canyon Melter Components

The vendor shall provide the following:

1. S350-185-15-40 - Off-Gas Film Cooler

One (1) off-gas film cooler assembly (Nozzle A) per Drawing W-818428, including Bill of Material items and the following details:

<u>Drawing No.</u>	<u>Description</u>	<u>Qty</u>
D-823784-A	Film Cooler, Sheet 1	1
D-823785	Film Cooler, Sheet 2	--
D-815460-A	Bail	1
D-815460-B	Pin	2

2. S350-185-15-50 - Back-Up Off-Gas Film Cooler

One (1) back-up off-gas film cooler assembly (Nozzle B) per Drawing W-818429, including Bill of Material items and the following details:

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<u>Drawing No.</u>	<u>Description</u>	<u>Qty</u>
D-823786-A	Film Cooler, Sheet 1	1
D-823787	Film Cooler, Sheet 2	---
D-815460-A	Bail	1
D-815460-B	Pin	2

D. Fabricated Equipment - Spare Melter

The following is a duplicate set of EN S350-185-15-40 and EN S350-185-15-50.

1. S999-350-15-40 - Off-Gas Film Cooler

One (1) assembly per W-818428 as described in Paragraph IV.C.1.

2. S999-350-15-50 - Back-Up Off-Gas Film Cooler

One (1) assembly per W-818429, as described in Paragraph IV.C.2.

E. Fabricated Equipment - Operating Spares

The following is a duplicate set of EN S350-185-15-40 and EN S350-185-15-50.

1. S999-350-50-45 - Off-Gas Film Cooler

One (1) assembly per W-818428 as described in Paragraph IV.C.1.

2. S999-350-50-50 - Back-Up Off-Gas Film Cooler

One (1) assembly per W-818429, as described in Paragraph IV.C.2.

3. S999-350-50-55 - C-Rings

Two (2) C-rings per Fluorocarbon Drawing C-230564.

3. S999-350-50-56 - C-Rings

Four (4) C-rings per Fluorocarbon Drawing C-230563.

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U. MATERIAL

A. Du Pont Furnished Material

Du Pont shall furnish the following material:

1. Inconel 690 bar and plate supplied as listed below for the film coolers, Drawings D-823784 and D-823786, for machining to final size:
 - a. Flange Material

Plate - 3" x 16" x 25-5/8" (Qty 6)
1" x 25-1/4" x 54" (Qty 1)
 - b. Cylindrical Parts

To be furnished in continuous length sizes with OD and ID as requested by vendor. (Vendor will be required to final machine to proper configuration.)
 - c. Support Baffle Material (.14 thk) Ref. D-823785, Section Y-Y

Sheet - .148 x 28" x 120"
 - d. Material Available for Other Parts

Plate 1/2" and 1" thick cut to rough size as required by vendor.
2. Inconel 690 welding wire.
3. Inconel 690 plate and welding wire for weld qualification samples.
4. The Du Pont Quality Assurance Field Representative (QAFR) shall:
 - a. Verify that each item is marked in a manner traceable to the identifying documentation.
 - b. Release items to vendor for use by signing the "customer turnover for use" column on the "shop receiving and inspection checklist" form.

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B. Vendor Furnished Material

1. The vendor shall furnish all material except for the Inconel 690 material listed in preceeding Paragraph U.A. This material shall include 304L sst and Nitronic 60 for use primarily in the lifting bail and all Bill of Material items.

2. Certification

Certification is required for each lot and heat of 304L sst and shall include both chemical analyses and mechanical properties.

3. Corrosion Evaluation

Corrosion evaluation of materials is not required.

4. Welding Rod

All 304L welds shall be made with low carbon welding rod. The vendor shall provide a system to ensure that only low carbon rod is used on 304L material.

5. Identification

Mill ASME or ASTM ink markings shall remain to the extent possible on the fabricated items. Identification shall meet the contamination prevention requirements, Paragraphs U.C.4 and 5.

C. Material Control/Contamination Prevention

1. The vendor shall establish a system to control 304L sst, Inconel 690, and the respective welding rods. This control shall include segregation of these materials from material for other jobs and written procedures for material usage and handling.
2. Appropriate fabrication techniques shall be used to prevent contamination of 304L sst and Inconel 690 with carbon steel.
3. No galvanized steel parts, marking ink, or other substances containing zinc or other low melting materials shall be permitted to contact the 304L sst at any time during storage or fabrication.

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4. Inks, labels, or other means of marking fabrication progress shall have a low chloride content (250 ppm maximum). Markings and labels shall be removed and the stainless steel surfaces thoroughly cleaned with alcohol, acetone, or other Du Pont approved solvents prior to assembly.
5. Acceptable marking materials are identified in Du Pont Spec. SP3D, Table 1, Page 2.

VI. FABRICATION

A. Fabrication Quality

1. It is imperative that the film coolers are fabricated with the highest regard for cleanliness, material quality, workmanship, accuracy, and control. This is dictated by the remote handling requirements described in Paragraph II.C.
2. In all instances, no deviation from the requirements specified on the drawings will be permitted without prior consideration and agreement in writing by Du Pont Engineering.
3. In general, the film coolers should be treated as instrument quality components and must be fabricated to the dimensions and tolerances specified on the drawings.
4. Blasting as a method of descaling or cleaning is not permitted.
5. Major repairs require specific written acceptance by Du Pont. Major repairs shall include as a minimum -- weld cracking over 0.012", base metal repairs (other than minor nicks and gouges), and any single repair made more than twice.

B. Welding

1. Procedures

a. General

- (1) Surfaces to be welded must be made free of oxide by machining, grinding, or pickling.

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- (2) Cleanliness is essential. The weld areas and adjacent areas and weld wire be freed of all contaminants (marking materials, shop dirt, oil, abrasive materials, etc) by grinding and solvent cleaning with clean wiper and solvent.
- (3) When welding Inconel 690 and 304L sst, weld only with the GTAW process using Du Pont supplied filler metal.
- (4) Where the inside or backside of the joint is accessible, the root must be excavated to sound material as indicated by dye penetrant inspection.
- (5) Where the inside or backside of the joint is not accessible, the root must be protected by inert gas back-up.
- (6) The oxide on each beade must be removed (preferably by a Flapper wheel) before depositing next bead.
- (7) All welds shall be continuous, sound and uniform in size throughout the entire length. Welds shall be smooth and blended into the base metal. Internal welds shall be ground smooth to a finish equivalent to the base metal. Intermittent welds are not permitted.
- (8) All butt welds to be double butt welded joints.

b. Vendor Procedures

The vendor shall submit written procedures for welding 304L sst, & welding Inconel 690. These procedures will be reviewed and approved by Du Pont Engineering prior to fabrication.

c. Liquid Penetrant Examination

- (1) Liquid penetrant examination shall be in accordance with ASME Section VIII, Division 1, Mandatory Appendix VIII.

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- (2) Testing solutions shall have low contents of mercury, sulfur, halogens, and other low melting materials. All traces of solutions shall be removed and the surfaces solvent cleaned and dried, prior to deposition of additional weld metal, and after final testing.
- (3) All welds shall be subjected to liquid penetrant examination as follows:
 - (a) Root pass and cover pass of fillet welds and full penetration welds deposited from one side only. In cases where thick joints are involved, the root liquid penetrant examination may be deferred until the second or third pass.
 - (b) Back chip and cover passes of all butt welds deposited from both sides, and other full penetration welds deposited from both sides.
 - (c) Areas where temporary attachments were welded to parent metal.
- (4) Vendor personnel performing and interpreting liquid penetrant examinations shall be qualified as outlined in Section VIII, Division 1, ASME Code.

d. Radiographic Examinations

- (1) Full radiographic examination shall be performed on all butt welded joints.
- (2) Radiographs shall be made using fine grain film and lead screens and shall be in accordance with UW-51, Section VIII, Division 1, ASME Code.
- (3) The vendor shall maintain radiographic records, including layout sketch and reader sheets.
- (4) Vendor personnel performing radiographic and interpreting the results shall be certified as described in the recommended practice SNT-1C-1A of the American Society of Non-Destructive Testing. The certified interpreter shall sign and date each radiographic reader sheet.

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e. Test Specimens

- (1) Prior to welding on this order, the vendor shall prepare test specimens and perform the following tests per ASME Code, Section IX, Part QW-462. The specimens shall be made based on the materials dictated in Paragraph VI.8.1.b. Wherever the test conditions simulate an actual weld to be made, the required number of specimens should be submitted for appraisal.

<u>Required No. of Specimen</u>	<u>Test</u>	<u>Per ASME Code Section IX</u>
2	Tension-Reduced Section-Plate Parallel to Rolling Diameter	Part QW-462.1(a)
2	Tension-Reduced Section-Transverse Weld	Part QW-462.1(a)
4	Side Bent Test Specimen-Transverse Weld	Part QW-462.2(a)
4 (2 Ea)	Face & Root Bends- Transverse-Weld	Part QW-462.3(a)

After Du Pont approved the results of the above tests, the vendor can proceed to weld parts on this order.

VII. TESTING

A. Levelness Requirement/Freedom of Movement

- At final inspection, the lifting bails shall be manually actuated to demonstrate free movement without binding. To meet requirements for canyon installation and removal, the film coolers must be oriented so that when lifted by the bail, their mounting flanges are horizontal within $\pm 2^\circ$. This will require a precision shop surface and a hoist. If the levelness requirement is not met

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initially, the preferred method of correction is adjustment of the bail. If correction cannot be achieved in this manner, counterweights must be used, however, there shall be no interference with mating pieces.

VIII. NAMEPLATES

The vendor shall attach to each film cooler a stainless steel tag bearing the Du Pont order number and engineering number as indicated.

IX. PREPARATIONS FOR SHIPMENT & STORAGE

Provide packaging to prevent damage from contaminants, and during handling and transit. This shall include:

- A. Sturdy wood crates.
- B. Provisions for handling with a forklift truck.
- C. Additional protection for machined surfaces. Flanged openings shall be sealed with low chloride pressure sensitive tape extending over the flange faces, and covered with 1/2" exterior grade plywood.
- D. Openings in the outer sleeve and the eight openings between the mounting flange and the insert shall be sealed with low chloride pressure sensitive tape also.
- E. Additional requirements for storage at the job site as follows:
 - 1. The vendor shall indicate what period of time their equipment can remain in the as-shipped condition on the job site without additional storage precautions.
 - 2. The vendor shall indicate any specific storage requirements necessary for periods longer than defined above.

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X. SURVEILLANCE SPECIFICATION

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. A QAFR will contact you to schedule inspection visits. In the event that you are not contacted, notify Quality Assurance Engineering Scheduling at least five days before each surveillance inspection is required by telephoning (302) 451-0200.
2. When major components or services are obtained from subvendors, the QAFR will inspect these items at the point of manufacture. It is the vendor's responsibility to include Du Pont inspection and notification requirements in sub-orders.

B. Vendor QA Manual/Procedure Requirements

1. The supplier shall submit with his quotation, a detailed procedure for the control and dispersal of Du Pont-furnished (from Keller Technology) Inconel 690 material and welding consumables. The procedure shall be reviewed for approval after the award of the order. As a minimum, the procedure shall address receiving inspection of incoming material from Keller, segregation of Du Pont material from the supplier's own material, maintenance of material identification on material cut to size, insurance of material to the shop for fabrication, maintenance of documentation, periodic reporting of the inventory of the material on hand, and a listing of the material received.
2. The supplier shall have in-place and functioning, a material control procedure which addresses supplier-furnished material, including welding consumables.
3. The supplier shall have in place and functioning, procedures which address the control of special processes. Special processes are defined as welding, heat treatment (if applicable) and non-destructive examination (radiography and liquid penetrant examination). The procedures shall address materials to be used, techniques, and qualification of personnel.

D = Deleted
 9660W/clb

C = Change

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4. The supplier shall have, in place and functioning, a procedure which addresses the control and calibration of measuring and test equipment. Calibration shall be traceable to nationally recognized standards.
5. The supplier may choose to use his own non-conformance reporting procedure or refer non-conformances to the QAFR or technical contact for resolution.
6. A Quality Control Program which satisfies the ASME Code, Section VIII, Division 1, Appendix 10, will satisfy the intent of Paragraphs 2, 3, 4, and 5 above.

C. Prefabrication Surveillance Meeting

The first visit will be initiated by W. Sadowski, QA Engineer (302) 451-0291. The surveillance and specification requirements will be reviewed with vendor's manufacturing and Quality Control personnel. A tentative schedule of future surveillance visits will be established. Du Pont Quality Assurance Engineering and Design will attend this meeting.

D. Surveillance Schedule

Vendor to request inspection at the following points:

1. Prefabrication meeting.
2. Continuous monitoring of the Inconel 690 Material Control System.
3. Preliminary Surveillance - As fabrication is beginning.
4. Intermediate Surveillance - As non-destructive examination is being performed.
5. Final Surveillance - Prior to shipment of film coolers; joint inspection with Design.

E. Surveillance Instructions

The following will be performed by the QAFR:

1. Prefabrication Meeting
 - a. Discuss specification requirements, clarifying the difference between fabrication and material control.

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

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- b. Discuss, in detail, the supplier's proposed control system for Du Pont-furnished material.
 - c. Discuss fabrication sequencing and adjust the surveillance points as necessary.
 - d. Resolve any exceptions the supplier may have.
2. Continuous monitoring of the Inconel 690 material control.
 - a. Confirm the segregation and control of Du Pont material.
 - b. Confirm the material identification is being maintained.
3. Preliminary Surveillance - As fabrication is beginning.
 - a. Verify the supplier's welding procedures. Confirm they are written in accordance with the ASME Code, Section IX.
 - b. Review the welder's qualifications assuring they are in accordance with the ASME Code, Section IX.
 - c. Review and approve the weld test samples and test results.
 - d. Visually monitor any welding and/or machining in progress.
4. Intermediate Surveillance - As non-destructive examination is being performed.
 - a. Review destructive testing procedures assuring they are in accordance with the ASME Code, Section V.
 - b. Review non-destructive examiner's qualifications assuring they are in accordance with the ASME Code, Section VIII, Division 1.
 - c. Witness the liquid penetrant examination of the final pass of all specified welds. Review and initial the supplier's test certificate for each test witnessed assuring the certificate is in accordance with the procedure.

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- d. Review any and all radiographs, including radiographs of repairs, noting the source, source strength, film type, screens, identification, and penetrameters. Initial the applicable radiographic reader sheets when satisfied with the radiographs.
 - e. Witness the vendor's dimensional inspection of detail components. Particular attention should be paid to the location of holes in the outer sleeve, the drilling of the flanges, the size of the slots, the finish of the parts, and the dimensions of the "O" ring groove.
 - f. On the off-gas film coolers (not required on the back-up off-gas film coolers), witness the trial fit-up on the insert prior to welding. Check for proper clearances between the bottom of the inner sleeve and the outer sleeve.
5. Final Surveillance - Prior to shipment of fabrications - joint surveillance with Design.
- a. Witness the supplier's inspection of the dimensions of the film coolers, noting checks for perpendicularity, parallelism, flatness and finish.
 - b. Review the supplier's preparations for shipment of the film coolers. Confirm the destination on shipping documents.
 - c. Witness the performance of the mechanical tests as described in Paragraph VII.A.

XI. DOCUMENTATION

- A. The fabricator shall prepare a documentation inventory transmittal sheet (listing all documents and numbers of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list Du Pont P.O. number, equipment identification, and be consecutively numbered.
- C. The Du Pont QA/R shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.

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PROJ: 9S1780
SPEC: 3-2183
REV: 2
DATE: June 14, 1988
PAGE: 18

D. The fabricator shall forward documentation at time of shipment as follows:

1. One complete set (including signed documentation inventory transmittal sheet) shall be sent by mail, immediately following acceptance by the QAFR, to:

E. I. du Pont de Nemours & Co., Inc.
Engineering Department - L3378
P. O. Box 6090
Newark, DE 19714-6090

Attn: J. Scafaria

2. One complete set (including signed documentation inventory transmittal sheet), to be included with shipment and marked as follows:

Attn: Receiving Supervisor - Construction
Savannah River Plant

3. Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction Material Expeditor
Building CAB/CS

4. One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108

Attn: W. Sadowski

5. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2671) TEL 803-725-6211 WU: AUGUSTA, GA)

VC: 06665

TO
201-635-0500
CBI Services, Inc.
One Main Street
Chatham, NJ 07926FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
1	20	87

ORDER NO. Alt 6
AXC 6247WORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE. CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-S-11 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 1)

E-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

GLASS MELTER VESSELS & FIXTURES

(REFERENCE BOTH VENDOR LETTERS #SRP2-200, & SRP-201
(ALT. #3 & #4) DATED 10/9/86.)THIS ALTERATION ISSUED TO INCLUDE ADDITIONAL COST FOR
THE FOLLOWING:

(ALT. #3)

- o REVISED INTERNAL EPOXY COATING ON BOTH VESSELS FROM
SR401 TO SR404, INCLUDING MATERIALS *SRP2-200.
- o MODIFY ORIGINAL NDE SCOPE REQUIRING ADDITIONAL
LIQUID PENETRANT EXAMINATION OF ALL MACHINED WELDS
AFTER FINAL MACHINING INCLUDING MANUFACTURING
LABOR *SRP2-200.
- o ADDED REQUIREMENT FOR AN INTERIM DIMENSIONAL
INSPECTION OF THE MELTER VESSELS, INCLUDING SET-UP,
POST WELD HEAT TREATMENT, REMOVAL & RE-INSTALLATION
OF ROUND OUTRINGS & INSPECTION *SRP2-200.

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-6247-W A6

EXECUTED BY

C. R. Lund

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

1-0-0-

BUYER

AMOUNT

\$.00

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALE
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE A
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001

(TWX: 810-771-2871)

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30913

TEL 803-725-8211

WU: AUGUSTA, GA)

VC: 06665

TO

201-635-0500
CBI Services, Inc.
One Main Street
Chatham, NJ 07928FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR

ORDER NO.	Alt 6
AXC 6247W	

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PL
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82
REQUIRED DELIVERY PROMISED SHIPPING DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-811 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 1)

E-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
		<p>o DELETED THE PRELIMINARY HYDROTEST OF BOTH VESSELS (CREDIT) *SRP2-200.</p> <p>(ALT. #4)</p> <p>o ADDITIONAL COST FOR EXAMINATION AFTER STRESS RELIEF OF WELDS. EXAMINATION FOR ONLY THOSE WELDS ADDED SINCE PREVIOUS LIQUID PENETRANT EXAM. SUBSEQUENT STRESS RELIEF OPERATIONS COVERING ONLY THOSE WELDS ADDED SINCE THE PREVIOUS STRESS RELIEF AND NOT LATER MACHINED WILL BE EXAMINED *SRP2-201.</p> <p>o RADIOGRAPHIC EXAMINATION OF ALL SHELL BUTT WELDS FOLLOWING THE FIRST STRESS RELIEVING OPERATION *SRP2-201.</p> <p>INCREASE PER THIS ALTERATION AMOUNTS TO \$42,995.00 AS PER VENDOR LETTERS DATED 10/9/86. *SRP2-200 & 201.</p> <p>TECHNICAL CONTACT: J.D. Gutmann, Jr. 302-366-3929</p> <p>ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.</p>	<p>PREVIOUS PRICE \$2,222,079.00</p> <p>ALT 6 INCREASE \$ 42,995.00</p> <p>NEW TOTAL FIRM PRICE \$2,265,074.00</p>

SHEET		FINAL	PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
MARK AND SHIP AS FOLLOWS:				951780 clb
TO: E. I. DU PONT DE NEMOURS & COMPANY				3-6247
ORDER NO.			EXECUTED BY	ORIGINATOR
0887			C. R. Lund	1-0-0.
AXC-6247-W A6		ISSUING POINT	BUYER	AMOUNT
		Wilm, DE		\$.00
ITEM NO.	GENERAL LEDGER & COST CODE			
<p>DIRECT ALL INQUIRIES TO THE ABOVE BUYER.</p> <p>PURCHASE EXEMPT FROM SOUTH CAROLINA TAX AND USE TAXES PURSUANT TO CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE A PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.</p> <p>APPROVED FOR DU PONT</p>				

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6247
REV: 4
DATE: May 27, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY
PROCUREMENT SPECIFICATION
FOR
GLASS MELTER VESSELS & ASSOCIATED REFRACTORY FIXTURES
TABLE OF CONTENTS

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SUMMARY OF CHANGES PER REVISION #2

<u>Page</u>	<u>Paragraph</u>	<u>Change</u>
2	II.B.11	Added vendor supplied facilities for refractory installation.
12	IV.F.	Added vendor supplied facilities.

SUMMARY OF CHANGES PER REVISION #3

1	II.B.1	Increased items from 7 to 10.
2	II.C	Deleted Du Pont furnished studs and dowels.
2	II.D.3	Changed "another location" to "CBI"
4	III.A.2	Revised paint specification from SR401 to SR404.
25	IX.A	" "
34	XII.F.19.b	" "
34	XII.F.20.c	" "
11	IV.C.7, 8, 9	Added items 8, 9 and 10.
11	IV.D	Deleted Du Pont furnished studs and dowels.
13	V.A	Added Paragraph 4.
18	VI.F.4.e.3	Added Paragraphs e. and f.
20	VII.A.1	Deleted Preliminary Hydrotest of Vessel
21	VII.C	" "
28	XII.E.11	" "
32	XII.F.11	" "
20	VII.A.1.c	Removed "Final" from hydrostatic test.
23	VII.D	" "
33	XII.F.15	" "
37	XIV.A.2	Changed control drawings from Du Pont to vendor.

C = Changed
 5680w/c1a

D = Deleted

N = New

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(N)

SUMMARY OF CHANGES PER REVISION #4

<u>Page</u>	<u>Paragraph</u>	<u>Change</u>
18	VI.F.4.e (B)	Deleted paragraph f.
18	VI.F.4.e	Added paragraph 4 covering P.T. tests after stress relieving.
19	VI.F.4.f	Added paragraph 4 covering radiographs of welds after stress relieving.
20	VII.A.1.a	Deleted reference to hydrotesting A and T nozzles.
20	VII.A.4	Changed chloride content of test water from less than 5 to less than 50 ppm.
20	VII.B	Deleted reference to hydrotesting A and T nozzles.
28	XII.E	Deleted reference to hydrotesting A and T nozzles.
31	XII.F	Deleted reference to hydrotesting A and T nozzles.

SPECIFICATION

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ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before August 15, 1984. The vendor shall quote all seven (7) items separately.
2. Place order by November 16, 1984. The vendor will be released to procure material for all items with this order placement.
3. Release fabrication of melter shell and head by April 1985 based on approval of the vendor's weld detail drawings.
4. Release fabrication of refractory and insulation fixtures by March 1985.

B. Completion Dates

Following are the required completion dates for fabricated items. In all cases, the item must be inspected and approved prior to shipping.

1. June 8, 1985 - Zirmul Gaging and Grinding Fixture, Item 3.
2. July 10, 1985 - K-3 Refractory Gaging Fixture, Item 4.
3. July 22, 1985 - Fiberfrax Forming Fixtures, Items 5 through 7.
4. December 15, 1985 - Canyon Melter Vessel, Item 1.
5. The vendor shall quote the earliest delivery for the spare melter vessel, Item 2.

II. SHIPPING INSTRUCTIONS

Shipping instructions will be furnished at a later date.

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D. The manufacturer shall forward documentation at time of shipment as follows:

1. One (1) complete set (including signed inventory transmittal sheet) to be included with shipment and marked as follows:

Attn: Receiving Supervisor
Construction-Savannah River Plant

2. Two (2) complete sets (including signed inventory transmittal sheet), best way to:

By UPS:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Freight:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

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3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE S. B. Hicks

4. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.
5. Three (3) copies of the following QA records are required (one copy per transmittal package).

Mill Test Reports for material

Analysis of hydrostatic test water

Analysis of liquid penetrant materials

Shop Travelers

Radiographic layout sketches

Radiographic reader sheets

Liquid penetrant examination reports

Leak test reports

Hydrostatic test reports

"As built" drawings

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XIV. VENDOR DRAWINGS

The vendor shall submit one reproducible of each design approval drawing and final drawing per the following requirements.

A. Design Approval Drawings

1. Du Pont will furnish a sepia of each drawing listed in Paragraphs IV.C.1. The vendor shall add weld details per the appropriate codes and standards, and the information listed in Paragraph XIV.D.
2. As an alternate, the vendor may submit shop fabrication drawings for approval. These must reference the corresponding Du Pont detail drawing number. In this case, the approved vendor drawings will become the controlling drawings for acceptance of weld details, dimensions, tolerances, and configuration.
3. These drawings must be submitted before Du Pont will release fabrication. One print of each drawing will be returned stamped "Approved" or "Approved As Noted". Fabrication release instructions will be included in the drawing transmittal letter.
4. The vendor shall revise all "Approved As Noted" drawings to reflect all changes. One reproducible of all "Approved" and "Approved As Noted" drawings shall be submitted as final drawings.

B. Measurement Area Drawings

The vendor shall submit drawings of the customer's measurement area, Paragraph VIII.B.3, for approval. These drawings shall include the following:

1. Measurement enclosure area
2. Precision shop surface(s)
3. Optical instrument supports
4. Platforms, ladders and handrails
5. Crane interface.

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C. As-Built Drawings

The vendor shall furnish a set of drawings, to the Du Pont Engineering Department, showing as-built critical dimensions, based on the final dimensional checks per Paragraph VIII.A. This is in addition to the QA records, Paragraph XIII.D.5.

- D. All drawings, transmittal letters, and correspondence shall include the following information: Project Number, Plant, Du Pont Order Number, EN Number, Vendor Shop Order Number.

Send all drawings to:

E. I. du Pont de Nemours & Company
Vendor Print Center L52S
Engineering Department
Louviere Building
Wilmington, DE 19898

SPECIFICATION

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I. IDENTIFICATION

<u>Item No.</u>	<u>Engg. Nos. (EN)</u>	<u>Description</u>
1	S350-185-10	Melter Vessel - Canyon
2	S999-350-10	Melter Vessel - Spare
3	S999-350-12-21	Zirmul Refractory Gaging & Grinding Fixture Assembly
4	S999-350-12-11	K-3 Refractory Gaging Fixture Assembly
5	S999-350-12-41	Bottom Head Fiberfrax Forming & Trim Fixture Assembly
6	S999-350-12-42	Sidewall Fiberfrax Forming & Trim Fixture Assembly
7	S999-350-12-44	Top Head Fiberfrax Forming & Trim Fixture Assembly

II. SCOPE

A. General

This specification covers requirements and procedures for fabricating, testing, inspecting, and shipping two glass melter vessels and associated refractory fixtures.

B. Items By Vendor

The vendor is responsible for providing:

1. Items 1 through 10, Paragraph IV.C.
2. All material except that listed in Paragraph V.A.
3. Procedures for verifying critical dimensions per Paragraph VI.C.
4. Welding procedures per Paragraph VI.F.2.
5. Weld samples per Paragraph VI.F.3.

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6. Gaskets, and blind flanges per Paragraph VII.A.5.
7. Facilities for Du Pont measurements per Paragraph VIII.B.
8. Shipping procedures per Paragraph XI.A.
9. Quality Assurance documents per Paragraph XIII.
10. Drawings per Paragraph XIV.
11. Vendor supplied facilities for refractory installation per Paragraph IV.F.

C. Items Furnished by Others

1. Du Pont shall furnish:
 - a. Material per Paragraph V.A.
 - b. Vessel flange o-ring, and A nozzle and T nozzle O-rings for the hydrostatic tests per Paragraphs VII.C. and E.
 - c. Instruments for Du Pont Construction measurements per Para VIII.B.2.
2. A support and lifting frame will be furnished by others, for vendor assembly with the melter vessel, per Paragraph IV.E.

D. Work By Others

1. The melter vessels, Items 1 and 2, will be lined by others with insulation and preformed refractory blocks.
2. The refractory gaging, forming, and trim fixtures, Items 3 through 7, will be used by others for initial fit-up and machining of the refractory components.
3. All external and internal auxiliary equipment will be furnished by others, and installed in the refractory lined melter vessel at CBI. This phase will verify mechanical fit-up of all components with the melter vessel prior to final shipment to the Savannah River Plant.

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III. REFERENCE DOCUMENTS

A. Codes & Standards

Unless otherwise specified, work under this specification shall be performed in accordance with the following codes and standards:

1. ASME Boiler & Pressure Vessel Code (Latest Edition) & Addenda

- a. Section II - Material Specifications
- b. Section V - Nondestructive Testing
- c. Section VIII - Division 1 - Pressure Vessels
- d. Section IX - Welding and Brazing Requirements

2. Du Pont Standards

<u>Number</u>	<u>Latest Date</u>	<u>Title</u>
SG2S	Jan 1983	Fabrication Requirements For Austenitic and High-Nickel Stainless Steel Pressure Vessels
SG4T	Nov 1983	Halide Leak Test
SW300M	Jan 1982	Austenitic Stainless Steel, Type 300 Series
SW33.1W	Jan 1985	Welding Nickel, Monel, Inconel, and Copper-Nickel Sheet and Plate with the Direct Current GTAW Process
SW33.2W	Sept 1980	Welding Nickel, Monel, Inconel, and Copper-Nickel Pipe with the Direct Current GTAW Process
SP3D	Dec 1982	Identification of Carbon Steel, Aluminum, Stainless Steel, and Other Alloys
SG5S	Dec 1981	Fabrication Of Welded Equipment

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<u>Number</u>	<u>Latest Date</u>	<u>Title</u>
SG5.1S	June 1981	Welding Requirements For Non-Code Equipment
SR404	June 1985	Painting System - Four Coat Epoxy-Special
SR122	June 1982	Two Coat Polyamide Epoxy System

B. Drawings For Information

The following drawings are submitted for information only:

<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>
W-732366	6	Melter Section
W-753011	D	Melt Cell Section E Sheet 1
W-753113	D	Melt Cell Section E Sheet 2
W-753009	D	Melt Cell Plan - Equipment Arrangement
W-753008	B	Melt Cell Plan - Jumper Arrangement

C. Model Photographs

Figure 1 Melter Support Frame

Figure 2 Melter Shell Installed on Support Frame

Figure 3 Assembly of Upper Frame, Melter Vessel, and Support Frame

Figure 4 Final Assembly of Melter Vessel and Frame on Support Beams (as installed in melt cell)

Note: Detail drawings of the support and upper frame, as shown on Figures 1 through 4, will be available at a later date.

D. Drawings For Fabrication

Fabrication drawings are listed in Paragraph IV.C.

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IV. DESCRIPTION OF COMPONENTS

A. Melter Vessel - Items 1 & 2

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

The melter vessel, Drawing PV-184722, consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment.

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

Prior to its installation in the DWPF melt cell (operating area), the melter vessel is permanently assembled and piped up to a two-piece machined frame having provisions for remote handling, and precise positioning, within the melt cell. Model photographs of the melter and frame, in various stages of assembly, are shown in Figures 1 through 4. Plan and elevation views of the installed melter/frame are shown on W-753011, W-753113, and W-753009. A plan view with all service piping in place is shown on W-753008.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

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4. Critical Fabrication Requirements

a. Remote Handling

After the melting operation becomes radioactive, all equipment in the melt cell must be installed and removed remotely using an overhead crane. This includes the melter/frame assembly, all auxiliary equipment mounted on the melter top head nozzles, and the connecting service piping (jumpers). Each auxiliary assembly on the top head, and its respective jumper, must be interchangeable with spares, and with future (spare) melter vessels. This restriction requires all mounting surfaces to be precisely located in three planes. To minimize tolerance build-up of the top head nozzle elevation, these nozzle flanges shall be machined with the vessel assembled to the frame per Paragraph IV.E.

b. Glass Containment

The conducting glass must not migrate through the refractory to the vessel wall, as this would short out the electrode power supply. To prevent glass penetration, insulation and refractory blocks must fit precisely with each other, and with the vessel contours. This dictates the following requirements:

- (a) all internal surfaces of the vessel must be machined to close tolerances.
- (b) vessel side wall and bottom nozzle tolerances must be held within close limits to ensure correct alignment with the drilled refractory, and close fitting internal components.

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B. Refractory Fixtures

The refractory fixtures, Items 3 through 7, are used by various refractory vendors to form or fit-up refractory components before shipment to the refractory installation vendor. This procedure is necessary to ensure that the refractory conforms to the vessel contours, and that all pre-machined holes are aligned with the vessel nozzles. The close fit-up tolerances are dictated by the glass containment requirement, Paragraph IV.A.4.b.

For the above reasons, the refractory fixtures must duplicate the respective vessel contours, and insulation/refractory interface contours.

C. Fabricated Equipment

The vendor shall fabricate the following items:

1. Item 1 - EN S350-185-10 - Melter Vessel - Canyon

Item 2 - EN S999-350-10 - Melter Vessel - Spare

Two (2) Melter Vessel Assemblies per Drawing PV-184722, Rev 9, and the following details:

<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>
D-185971	17	Shell Details Sheet 1
D-185972	13	Shell Details Sheet 2
D-185973	11	Shell Details Sheet 3
D-185974	13	Shell Details Sheet 4
D-185975	25	Shell Details Sheet 5
D-185976	18	Shell Details Sheet 6
D-185977	15	Shell Details Sheet 7
D-185978	23	Shell Details Sheet 8
D-185979	11	Shell Details Sheet 9
D-185980	20	Shell Details Sheet 10
D-185981	15	Shell Details Sheet 11
D-185982	14	Shell Details Sheet 12

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<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>
D-186665	6	Shell Details Sheet 13
D-189483	46	Shell Details Sheet 14
D-189714	16	Shell Details Sheet 15
D-198197	14	Shell Details Sheet 16
D-198199	2	Shell Details Sheet 17
D-198202	1	Shell Details Sheet 18
D-198738	0	Shell Details Sheet 19
D-186204	22	Top Head Details Sheet 1
D-186205	8	Top Head Details Sheet 2
D-186206	14	Top Head Details Sheet 3
D-186207	18	Top Head Details Sheet 4
D-186208	1	Top Head Details Sheet 5
D-186209	48	Top Head Details Sheet 6
D-186826	2	Top Head Details Sheet 7
D-189685	0	Top Head Details Sheet 8
D-198217	0	Top Head Details Sheet 9

2. Item 3 - EN S999-350-12-21

- a. One (1) Zirmul Gaging and Grinding Fixture Assembly per W-742111, Rev 8, including Bill of Material items, and the following details (Drawing W-741478 is included to show various assembly configurations for refractory manufacturing and fit-up stages):

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-186809-A	13	Base	1
D-186809-B	13	Dummy Block	1
D-186809-C	13	Segment	1
D-183699-B	15	Post	1
D-183699-K	15	Trammel Rod	1
D-186811-A	3	Clamp Plate	1
D-186811-B	3	Spanner Wrench	1
D-186811-D	3	Nut	1

C = Changed
 5680w/c1a

D = Deleted

N = New

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- b. One (1) Trammel Assembly per W-742149-A, Rev 3, including Bill of Material Items 1 & 2, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-183699-C	15	Center	1
D-183699-E	15	Spacer	1
D-183699-H	15	Trammel Scribe	1
D-183699-L	15	Trammel Arm	2
D-183699-M	15	Head	1

- c. One (1) Contour and Flatness Template Assembly per W-742149-B & W-742149-C, Rev 3, including Bill of Material Items 3 through 6, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-186810-A	2	Template Support Arm	1
D-186810-B	2	Support Arm Post	1
D-186810-C	2	Contour Template	1
D-186810-D	2	Flatness Template	1

3. Item 4 - EN S999-350-12-11

- a. One (1) K-3 Refractory Gaging Fixture Assembly per W-741477, Rev 11, including Bill of Material items, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-186815-A	17	Base	1
D-186815-B	17	Locating Template	1
D-186815-C	17	Locating Jig	1
D-186816-A	13	Riser Gage	1
D-186816-B	13	Riser Support	1
D-186816-C	13	Riser Insert	1
D-183699-N	15	Trammel Rod	1
D-186816-D	13	Post	2
D-186811-D	3	Nut	1

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- b. One (1) Trammel Assembly per W-742149-A, Rev 3, including Bill of Material Items 1 & 2, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-183699-C	15	Center	1
D-183699-E	15	Spacer	1
D-183699-H	15	Trammel Scribe	1
D-183699-L	15	Trammel Arm	2
D-183699-M	15	Head	1

4. Item 5 - EN S999-350-12-41

One (1) Bottom Head Fiberfrax Forming and Trim Fixture Assembly per W-741480-A and -B, Rev 1, including Bill of Material items, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-186813-A	12	Base	1
D-186813-B	12	Top	1
D-186825-A	5	Trim Fixture	1

5. Item 6 - EN S999-350-12-42

One (1) Sidewall Fiberfrax Forming and Trim Fixture Assembly per W-743482-A and -B, Rev 0, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-187370-A	8	Base	1
D-187370-B	8	Top	1
D-187370-C	8	Spacer	6
D-187370-D	8	Trim Fixture	1
D-187370-E	8	Trim Gauge	1

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6. Item 7 - EN S999-350-12-44

One (1) Top Head Fiberfrax Forming and Trim Fixture Assembly per W-741479-A and -B, Rev 1, including Bill of Material items, and the following details:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-186814-A	11	Base	1
D-186814-B	11	Top	1
D-186814-C	11	Spacer	8
D-187144-A	4	Trim Fixture	1

7. Item 8 - Dowels

Furnish dowel pins for the melter vessel A and T nozzle flanges, per CBI drawings 44991-35 and 44992-35. Total of eight (8) dowel pins for two vessels.

8. Item 9 - Studs

Furnish Acme studs for the melter vessel A and T nozzle flanges, per CBI drawings 44991-34 and 44992-34. Total of sixteen (16) studs for two melter vessels.

9. Item 10 - Nuts

Furnish sixteen (16) Acme thread nuts for preceeding Item 9.

To insure proper fit up and clearances, the Acme studs and nuts must be purchased from Still-Walter Tool & Mfg. Co., Orangeburg, S. C.

D. Items Furnished By Others

Support Frame

The melter support frame will be furnished by others. This is shown in Figure 1.

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E. Final Machining of Top Head Nozzle Flanges

The vendor shall use the following procedure to machine the top head nozzle flanges. This approach reduces the elevation tolerance accumulation between support frame, melter shell, and top head.

1. Allow excess material on the top head nozzle flange surfaces during fabrication.
2. Assemble the shell and head with the support frame furnished by others, Paragraph IV.D.2.
3. Machine the nozzle flange surfaces to the final elevation, relative to the plane of the support frame feet, within $\pm .010$ ", per Du Pont Drawing D-198217, Rev. 0.

F. Vendor Supplied Facilities

1. Vendor shall supply the following accommodations for installation of the refractory within the vessels.
 - a. Storage area for refractory materials, approximately 2000 sq. ft.
 - b. Work area, approximately 40 ft. clear on all sides of the melter vessel and lid.
 - c. Electrical service, 110 volt single-phase, and 440 volt, 3-phase in the near area.
 - d. Compressed air, in the near area.
 - e. Unloading dock with a truck high dock to receive and ship TECO/DU PONT shipments as required.
 - f. Jib crane, mounted to reach all areas of vessel and lid, to lift refractory pieces. 2000 lb. capacity with hook height approximately 8 ft. above top of vessel when raised.
 - g. Lighting is to be normal building lighting in good repair and operating.

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V. MATERIAL

A. Du Pont Furnished Material

Du Pont shall furnish the following material:

1. Inconel 690 bar and plate for top head nozzle/flange assemblies A and T, drawing D-186208, with an allowance for machining to final size:
 - a. Nozzle material: 10.100 $\pm$.005" OD x 7.500 $\pm$.015" ID x 60.0"
(Finish to 8.00" ID)
 - b. Flange material: 17.50" x 26.50" x 3.00"
(Finish to 17.00" x 25.50" x 2.50")
2. Inconel 690 welding wire for welding the A and T nozzles to the 304L stainless steel head. Both .093 and .125 inch diameter wire will be available.
3. Inconel 690 plate and welding wire for weld qualification samples.
4. The Du Pont Quality Assurance Field Representative (QAFR) shall:
 - a. Verify that each item is marked in a manner traceable to the identifying documentation.
 - b. Release items to CBI for use by signing the "Customer Turnover for use "Column on the" Shop Receiving and Inspection Checklist" form, CBI Procedure DFM-1 page 3.

B. Vendor Furnished Material

1. The vendor shall furnish all material except for those items listed in preceeding Paragraph V.A.

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2. Certification

All 304L stainless steel shall have ASME designations and shall meet the requirements in Section II of the ASME Code. Material certifications shall be provided for each lot and heat used. Certification shall include both chemical analysis and mechanical properties per Section II.

3. Corrosion Evaluation

Corrosion evaluation of materials is not required.

4. Welding Rod

All 304L welds shall be made with low carbon welding rod. The vendor shall provide a system to ensure that only low carbon rod is used on 304L material.

5. Identification

The vendor shall identify all melter vessel material by the ASME designation. Mill ASME or ASTM ink markings shall remain to the extent possible on the fabricated vessels. Identification shall meet the contamination prevention requirements, Paragraph V.D.3. & 4. Stamping is not permitted.

C. Material Control

The vendor shall establish a system to control 304L stainless steel, Inconel 690, and the respective welding rods. This control shall include:

1. Segregation of this material from material for other jobs.
2. Written procedures for material withdrawal and use.

D. Contamination Prevention

1. Appropriate fabrication techniques shall be used to prevent contamination of 304L stainless steel and Inconel 690 with carbon steel.

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2. No galvanized steel parts, marking ink, or other substances containing zinc or other low melting materials shall be permitted to contact the vessel stainless steel at any time during storage or fabrication.
3. Inks, labels, or other means of marking vessel fabrication progress shall have a low chloride content (250 ppm maximum). Markings and labels shall be removed, and the stainless steel surfaces thoroughly cleaned with alcohol, acetone, or other Du Pont approved solvents prior to assembly.
4. Acceptable marking materials are identified in Du Pont Specification SP3D, Table 1, Page 2.

VI. FABRICATION

A. Fabrication Quality

1. Melter Vessel

To prevent radioactive contamination in the melt cell, vessel integrity must be maintained over a period of years. For this reason, it is imperative that the melter vessels be constructed with the highest regard for cleanliness, material quality, workmanship, fabrication control, and testing procedures to reduce to a minimum any possibility of vessel failure or leakage.

2. Refractory Fixtures

The gaging and forming fixtures are intended to be used for both vessels on this order, and for future spare melter orders. Rugged, high quality construction is required to withstand the numerous loading, handling, and shipping cycles.

B. Close Tolerances

The melter vessels and associated fixtures must be fabricated to the dimensions and tolerances specified on the drawings. These dimensions and tolerances are of extreme importance, and will be strictly enforced. Refer to Paragraphs IV.A.4, and IV.B for justification.

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C. Procedures

The vendor shall submit written procedures to establish and verify centerlines, critical contours, dimensions, flatness, and parallelism for all items.

D. Code Stamping

Code stamping is not required.

E. In-Shop Handling

There are no lifting lugs for in-shop handling of the melter shell. The vendor shall use appropriate handling aids, fixtures, etc to maintain dimensional integrity during fabrication.

F. Welding

1. Vendor Drawings

The vendor shall furnish weld detail drawings per Paragraph XIV.A.

2. Procedures

The vendor shall submit written procedures for welding 304L stainless steel, and welding Inconel 690 to 304L stainless steel. These procedures will be reviewed and approved by Du Pont prior to fabrication.

3. Samples

Inconel 690 to 304L stainless steel weld samples shall be submitted to Du Pont for approval prior to welding the A and T nozzles to the top head.

4. Melter Vessels - Items 1 & 2

- a. All welding shall be in accordance with the latest revision of ASME Section VIII, Division 1.

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- b. Welders must be qualified in accordance with Section IX of the code. Welder performance qualification records for each welder shall be available for review by the Du Pont Quality Assurance Representative (QAFR).
- c. Weld end preparations shall be machined or plasma cut and ground to bright metal. The Du Pont QAFR shall:
 - (1) examine the fit-up, including proper joint geometry, prior to any welding.
 - (2) verify proper weld rod material
- d. Shell and head water jackets
 - (1) Welding and testing of the independent water jackets must follow the sequence described in Paragraph VII.
 - (2) Welds for the water jackets shall be based on:
 - Full penetration welds, except as shown on drawings covering baffle attachment to the shell
 - Minimizing crevices to prevent stress corrosion cracking due to chlorides
- e. Liquid Penetrant Examination
 - (1) Liquid penetrant examination shall be in accordance with ASME Section VIII, Division 1, Mandatory Appendix VIII.
 - (2) Testing solutions shall have low contents of mercury, sulfur, halogens, and other low melting materials. All traces of solutions shall be removed, and the surfaces solvent cleaned and dried, prior to deposition of additional weld metal, and after final testing.

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(3) All welds shall be subjected to liquid penetrant examination as follows:

- a) Root pass and cover pass of fillet welds and full penetration welds deposited from one side only. In cases where thick joints are involved, the root liquid penetrant examination may be deferred until the second or third pass.
- b) Welds on the bottom ring forging and riser boss, Drawing D-185978, shall be checked by a progressive examination as follows:

First Side: 1/4T, 1/2T, 3/4T, cover pass
Second Side: Back gouge, 1/4T, 1/2T, 3/4T, cover pass

Where T is the distance from the root to the surface at any given location along the weld.

- c) Back chip and cover passes of all butt welds deposited from both sides, and other full penetration welds deposited from both sides.
- d) Areas where temporary attachments were welded to parent metal.
- e) All machined welds after final machining. For these cases, the penetrant test after machining may take the place of the cover pass penetrant test.

(D)

(N)

4. Liquid penetrant examination of welds following stress relieving operations, shall be as follows:

- a) After the first stress relief, P.T. all welds which will not be machined.
- b) After each subsequent stress relief, P.T. only those welds (1) which have been added after the previous stress relief, (2) which will not be machined.

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- (5) Vendor personnel performing and interpreting liquid penetrant examinations shall be qualified as outlined in Section VIII, Division 1, ASME Code.

f. Radiographic Examination

- (1) Radiographs shall be made using fine grain film and lead screens and shall be in accordance with UW-51, Section VIII, Division 1, ASME Code.
- (2) Those welds in the bottom ring forging and riser boss, which cannot be checked reliably with radiographs, shall be examined with a progressive liquid penetrant test per Paragraph VI.F.4.e.3.b. All other full penetration containment butt welds on the shell shall be 100% radiographed.
- (3) If the formed vessel heads are made from welded plates, all welds shall be 100% radiographed.
- (N) (4) Shell butt welds, as described in paragraph (2) above, following the first stress relieving operation.
- (5) The vendor shall maintain radiographic records including layout sketch and reader sheets.
- (6) Vendor personnel performing radiography and interpreting the results shall be certified as described in the recommended practice SNT-TC-1A of The American Society of Nondestructive Testing. The certified interpreter shall sign and date each radiographic reader sheet.

5. Refractory Fixtures - Items 3 through 7

- a. Welding shall be in accordance with Du Pont Specification SG5S and SG5.1S, Class B.
- b. Appropriate techniques shall be used to minimize distortion, such as use of a skip sequence.
- c. The Zirmul and K-3 refractory fixtures, Items 3 and 4, shall be stress relieved prior to final machining.

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VII. TESTING

A. General

1. The vendor shall perform leak and hydrostatic tests on the vessel components per the following sequence:
 - (C) a. Leak test nozzles A and T prior to welding these nozzles to the shell per Paragraph VII.B.
 - b. Leak and hydrotest water jackets, bottom coils, and manifolds per Paragraph VII.C.
 - c. Hydrotest of vessel after machining is completed per Paragraph VII.D.
2. These tests shall be witnessed and approved by the Du Pont QAFR.
3. Following the tests, the vendor shall submit a written summary of the tests and results to Du Pont.
- (C) 4. Water containing less than 50 ppm chlorides shall be used for all hydrostatic tests. An analysis of the test water is required.
5. The vendor shall provide the following items for the final vessel hydrostatic test, Paragraph VII.E:
 - a. Blind flanges for the A and T nozzles.
 - b. Rubber gaskets and blind flanges for the remaining head and shell nozzles.

B. Nozzles A and T

(D)

(C)

- After the manifolds are welded to the nozzle/flange assembly:
- a. Plug all manifold openings.
 - b. Halide leak test the manifold per Du Pont Standard SG4T at 15 psig. Both interior and exterior surfaces of the nozzle shall be checked.

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C. Water Jackets

1. General

- a. The shell, bottom head, and top head have two independent water passages each, denoted A and B on the drawings. Each passage is fed by an independent manifold. This design reduces the risk of coolant loss due to a single component failure.
- b. To ensure leak-free welds, the "A" and "B" passages must be welded and tested per the sequence listed in Paragraphs VII.C.2. through 4. below.

2. Melter Shell Water Jackets (Sidewall)

- a. Weld the "B" manifolds and flow channels only.
- b. Halide leak test the "B" assembly per Du Pont Standard SG4T at 15 psig. Both interior and exterior surfaces of the shell shall be checked.
- c. Subject the "B" assembly to a 90 psig hydrostatic test.
- d. Dry the assembly with clean, dry, filtered air.
- e. Add the "A" manifold and weld the "A" flow channels closed.
- f. Repeat steps b through d above on the "A" assembly.
- g. Seal all jacket openings with polyethylene caps or low chloride tape.

3. Bottom Head Coils

- a. Weld "A" and "B" coils to the bottom head.
- b. Halide leak test, in turn, the "A" and "B" coils per Du Pont Standard SG4T at 15 psig. Both interior and exterior surfaces of the shell shall be checked.
- c. Subject both "A" & "B" coils to a 90 psig hydrostatic test.

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- d. Dry the assembly with clean, dry, filtered air.
- e. Seal all openings with polyethylene caps or low chloride tape.

4. Melter Top Head Water Jackets

- a. Weld the "B" manifold and flow channels only.
- b. Halide leak test the "B" assembly per Du Pont Standard SG4T at 15 psig. Both interior and exterior surfaces of the head shall be checked.
- c. Subject the "B" assembly to a 90 psig hydrostatic test.
- d. Dry the assembly with clean, dry, filtered air.
- e. Add the "A" manifold and weld the "A" flow channels closed.
- f. Repeat steps b through d above on the "A" assembly.
- g. Seal all jacket openings with polyethylene caps or low chloride tape.

D. Melter Vessel - Hydrostatic Test

After all welding and final machining is completed, a hydrostatic test shall be performed as follows:

1. Assemble the head to the shell per Drawing PV-184722 using the Du Pont furnished stainless steel o-ring.
2. Assemble blind flanges and Du Pont furnished o-rings on the A and T nozzles.
3. Assemble blind flanges and rubber gaskets on all other nozzles.
4. Perform an 18 psig hydrostatic test on the vessel.
5. Remove the top head.
6. Drain and dry the shell and head. Residual water shall be swabbed from both components.

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VIII. VERIFICATION OF DIMENSIONS AND TOLERANCES

A. Vendor Measurements

1. Interim Measurements

After completion of the first shell heat treatment, following welding of all nozzles, the vendor shall measure and record critical dimensions and contours. These shall include locations of nozzle centerlines.

2. Final Measurements

- a. After completion of fabrication, the vendor shall check critical dimensions and contours of the refractory gaging fixtures, forming fixtures, and melter vessels using the approved procedures per Paragraph VI.C. The Du Pont QA/R shall witness these checks.
- b. Results of the above measurements shall be documented with as-built drawings, per Paragraph XIV.C.
- c. Melter vessel measurements shall be made under the same conditions as those required for Du Pont measurements, Paragraph VIII.B.

B. Customer Measurements

1. General

- a. After the vendor's dimensional checks and records are completed, and prior to epoxy coating the interior surfaces per Paragraph IX.A., each melter vessel shall be measured by Du Pont. These dimensions shall be recorded by Du Pont on the same format as the vendor's as-built dimension drawings.
- b. These activities are in addition to, and do not take the place of, the vendor's measurements, and other vendor requirements in this specification.

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2. Items By Du Pont

Du Pont will furnish measuring instruments such as calibrated jig transits, tilting levels, and calibrated and certified scales. Du Pont may also use electronic theodolites. Scales will be graduated to 0.001". The optical instruments will be equipped with micrometers graduated to 0.001". The electronic theodolites will be calibrated to 0.001".

3. Items By Vendor

a. Measurement Area

- (1) The vendor shall provide a measurement area, dedicated to Du Pont's exclusive use, for approximately five working days. This area shall include:
 - A precision shop floor surface level within $\pm .0025"$. This shall accept the 11'-0" wide x 17'-3" long support frame.
 - 30 Feet of head room to the bottom of the crane hook.
 - Lifting aids for the melter shell and head.
 - Enclosures or partitions.
 - Temperature controlled at 70°F $\pm 5^\circ$ F. The vendor shall furnish thermometers.
 - Clear space of at least 7 feet surrounding the vessel.
 - Rigid supports for optical transits and tables. These shall be set-up perpendicular to the vessel centerlines, and be a minimum of 7 feet away from the vessel, and at least 3 feet higher than the vessel.
 - Substantial platforms, ladders, stairs, and handrails, all meeting OSHA requirements.

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- Lighting suitable for optical measurements. This shall be on average of 100 foot candles where measurements will be made.
- Secure storage of Du Pont's optical instruments when not in use.
- This area must be solely for Du Pont's use when measurements are being made.

b. Drawings

The vendor shall submit measurement area drawings for approval per Paragraph XIV.8.

IX. PROTECTIVE COATINGS

A. Melter Vessels - Items 1 and 2

The shell and head interior surfaces, including nozzles, shall be cleaned, prepared, and coated with a special four-coat epoxy system per Du Pont Specification SR404 Rev. 0.

As noted, the Du Pont QA/R shall witness and approve this operation. Special precautions shall be taken to protect this coated surface during handling, loading, and shipping.

B. Refractory Gaging Fixtures - Items 3 & 4

1. Paint unmachined surfaces, and the machined inside surface of the formed heads, per Du Pont Paint Specification SR122.
2. Coat all other machined surfaces per Du Pont Standard L2A, Class 1.

C. Forming and Trim Fixtures - Items 5 through 7

Protective coating is not required on these items.

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X. NAMEPLATES

A. Melter Vessels - Items 1 and 2

The nameplate shall be a 300 series stainless steel plate per Paragraph UG-119 of the ASME Code. This nameplate, or an additional plate mounted below, shall include the Du Pont order number, EN number, type of material, and the Du Pont QAFR's initials.

B. Gaging & Forming Fixtures - Items 3 through 6

Each fixture shall have a 300 series stainless steel nameplate with the Du Pont order number, and EN number.

XI. PREPARATIONS FOR SHIPPING

A. Procedures

The vendor shall submit written procedures for shipping all items, with special attention given to safeguards to maintain tolerances during shipment. These procedures shall be reviewed and approved by Du Pont.

B. Control

Special precautions shall be used to protect the following vessel components:

1. Flange surfaces
2. Studs and dowels on Nozzles A and T
3. Epoxy coated surfaces

XII. INSPECTION SPECIFICATION

A. Inspection

1. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.

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2. When major components or services are obtained from sub-vendors, the QA/R will inspect these items at the point of manufacture. It is the vendor's responsibility to include Du Pont inspection and notification requirements for sub-orders.

B. Vendor QA Manual/Procurement Requirements

1. The vendor shall have in-place and be using a Quality Assurance Manual which complies with the ASME Code, Section VIII, Division 1, Appendix 10.
2. The vendor shall submit an uncontrolled copy of the QA Manual with his bid. The successful bidder shall submit a controlled copy of the QA Manual within 60 days of award of the order.
3. The QA Manual shall contain a special procedure for controlling Du Pont furnished material.

C. Special Considerations

1. These melters will be used to process radioactive materials.
2. All connections to the melter will be made remotely so nozzle locations are critical.
3. The melters will be dimensionally checked using precision optical tooling. This checking will be done by Savannah River Construction.

D. Pre-fabrication Inspection Meeting

The first visit will be initiated by J.D. Gutmann, Project Engineer, (302) 366-3929. The inspection and specification requirements will be reviewed with vendor's manufacturing and quality control personnel. A tentative schedule of future inspection visits will be established.

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E. Inspection Schedule (Vendor to request inspection at the following points)

1. Prefabrication inspection meeting.
2. Inspection of vessel fit-up.
3. Inspection of the refractory fixtures - Joint Inspection
4. To witness liquid penetrant inspections.
5. To review radiographs.

(D)

6. Witness halide leak testing of the A and T nozzle manifolds.
7. To inspect fit-up and welding of Inconel 690 nozzles in the top head.
8. To witness liquid penetrant inspection of Inconel 690 to 304 stainless steel welds.
9. Witness installation of the top head to the shell.
10. Witness halide leak testing of the water jackets.
11. Witness pressure testing of the water jackets.
12. Witness drying of the water jackets.
13. Witness installation of the top head to the shell.
14. Witness final pressure testing of the melter.
15. Witness assembly of the melter to the frame.
16. Witness vendor's dimensional inspection of the melter.
17. Witness SR Construction's dimensional inspection - Joint Inspection.
18. Preparation of vessel internal surfaces for coating.

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19. Inspection of the internal coating.

20. Preparation for shipment.

F. Inspection Instructions (The following inspections will be performed by the QAFR)

1. Prefabrication Meeting

- a. Review the inspection hold points with the supplier. Make adjustments in the inspections and sequence, as necessary, to fit the fabrication sequence.
- b. Establish requirements for material traceability. This includes segregation of Du Pont material and use of a log to locate material in the melter.
- c. Review the vendor's procedure for dimensional inspection of all critical dimensions.
- d. Review welding of Inconel 690 to stainless steel. Investigate the vendor's welding procedure and schedule for sample preparation.
- e. Discuss halide leak testing per SG4T. Assure vendor has access to acceptable equipment.
- f. Discuss the use of low chloride marking materials, tapes, nondestructive testing materials, and the use of demineralized water for the hydrostatic test.

2. Inspection of vessel fit-up.

- a. Review mill test reports and assure applicable material specifications are satisfied.
- b. Compare mill test reports with the actual heat numbers of the material on hand.
- c. Check the thickness and gage of the material on hand.
- d. Review welding procedures and welder's qualifications.

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- e. Witness representative sample of production welding, noting the process, filler materials, welder, and procedure. Assure the procedure is being followed and that the welder is qualified.
 - f. Inspect the fit-up of mating parts. Assure the fit-up is in accordance with ASME Code requirements.
 - g. Witness a representative sample of backchipping. Designate a vendor representative to complete these inspections. Vendor certification that backchip inspections were performed is required.
3. Inspection of the refractory fixtures - Joint Inspection
- Witness the dimensional inspection of the refractory fixtures, by the supplier.
4. Witness liquid penetrant inspections.
- a. Assure that all liquid penetrant examinations are performed in accordance with a written procedure. Assure examiners are properly qualified.
 - b. Review certificates of composition of penetrant materials.
 - c. Witness a representative sample of liquid penetrant examinations of root passes, back chip inspections, and repairs of areas of temporary attachments. Designate a vendor representative to complete the remainder of these examinations.
 - d. Witness all final liquid penetrant examinations.
5. Review radiographs.
- a. Review all radiographs, noting the technique, source, source size, film, and any repairs if applicable.
 - b. Review the radiographer's qualifications.

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- c. Review the radiographic layout sketch and the reader sheets.

(D)

- 6. Witness halide leak testing of the A and T nozzle manifolds.
 - a. Witness the halide leak testing of each nozzle manifold, in accordance with SG4T.
 - b. Assure the vendor is testing with an acceptable detection device, which has been calibrated with a known leak standard, and that the operator is qualified.
- 7. Inspect the fit-up and welding of the Inconel 690 nozzles in the top head.
 - a. Witness the welding of the Inconel nozzles in the top head.
 - b. Assure the welding is performed in accordance with the qualified welding procedure by qualified welders.
- 8. Witness the liquid penetrant examination of the Inconel 690 to 304 stainless steel welds.
 - a. Witness all liquid penetrant examination of this combination of materials.
 - b. Assure examinations are performed in accordance with the written examination procedure.
- 9. Witness top head installation.
 - a. Witness installation of the top head.
 - b. Assure the furnished "O" ring assembly is used during this installation.
 - c. Check bolting material.
 - d. Assure bolts are properly, sequentially tightened.

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10. Witness halide leak testing of the water jackets.
 - a. Witness the halide leak testing of each water jacket, in accordance with SG4T, before hydrostatic testing.
 - b. Assure the vendor is testing with an acceptable detection device, which has been calibrated with a known leak standard, and the operator is knowledgeable.
11. Witness pressure testing of the water jackets.
 - a. Witness the filling of the water jackets with demineralized water. Assure that any entrapped air, which may affect the test, has been eliminated from the jacket. Review the analysis of the hydrostatic test water.
 - b. Witness each hydrostatic test, noting the test pressure, and the time held. No leaks are tolerable.
12. Witness drying of the water jackets.
 - a. Witness the drying of the water jackets.
 - b. Assure the vendor has a positive means for verifying that all the water has been removed from the jacket.
13. Witness top head installation.
 - a. Witness installation of the top head.
 - b. Assure the furnished "O" ring assembly is used during this installation.
 - c. Check bolting material.
 - d. Assure bolts are properly, sequentially tightened.

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14. Witness pressure testing of the melter.

- a. Review the analysis of the demineralized hydrostatic test water.
- b. Witness the hydrostatic test of the melter, noting the test pressure and the time held. No leaks are tolerable.
- c. Witness drying of the melter internally.

15. Assembly of the melter to the frame.

Witness the assembly of the melter to the frame, furnished by others. Note the ease/difficulty with which the two pieces are assembled.

16. Witness the vendor's dimensional inspection of the melter.

- a. Review the vendor's area for performing dimensional inspections. The area should be maintained at a constant temperature, which is verifiable, be isolated from the rest of the shop, and have provisions for optical measurements, as a minimum.
- b. Witness the vendor's dimensional inspection.
- c. Assure an "as built" record of critical dimensions is being maintained.

17. Witness Savannah River Construction's dimensional inspection - Joint Inspection.

- a. Witness the Construction dimensional inspection.
- b. Compare the vendor's "as built" record with Construction's "as built" record.
- c. If any significant differences exist, help to get them resolved.

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18. Preparation of the melter internal surfaces for coating.

- a. Witness preparation of the internal surfaces of the melter prior to coating.
- b. Inspect prepared surface per Du Pont Specification SR404 Paragraph 5.1.

19. Inspection of the internal coating.

- a. Visually inspect the internal coating for runs, sags, drips or other detrimental conditions.
- b. Assure the coating is in the proper thickness range.
- c. Witness a spark test of the coating, and necessary repairs, per Du Pont Specification SR404 Paragraphs 5.2 and 5.3.

20. Preparation for shipment.

- a. Assure all openings are properly sealed for shipment.
- b. Discuss shipping provisions with the vendor.
- c. Assure all nameplates are properly affixed to the melter.

XIII. QUALITY ASSURANCE DOCUMENTATION

- A. The manufacturer shall prepare a documentation inventory transmittal sheet (listing all documents and number of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list the Du Pont P.O. number, project number, equipment EN number, and be consecutively numbered.
- C. The Du Pont QAFR shall review documentation packages and sign and date each inventory transmittal sheet signifying acceptance prior to release for shipment.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC04-76SF00001
VC: 06923SAVANNAH RIVER PLANT
PO BOX 117-113, AUSTIN, GA 30602DATE
11 20 87ORDER NO. Alt 7
AXC6850W(716) 693-3840
Keller Technology
2320 Military Road
P. O. Box 103 (Buffalo 14217)
North Tonawanda, NY 14150FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND QUOTE NUMBER MUST BE SHOWN IN EACH ITEM PAID IN ORDER TO BE INVOICED

Please mail 2 copies of your invoice
to the above address
ATTN: Accounts Payable Division

Please Furnish Materials and Services Subject to Conditions and Instructions Listed on (ISR 1-87)

REQUIRED DELIVERY

PROMISED SHIPPING
DATEA ☒B ☐

CASH TERMS

VIA

F.O.B.

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

MODIFY ORDER IN PART, TO INCLUDE "LATEST" REVISED
DU PONT DRAWINGS, ETC. AS SHOWN.

1 S350-185-19 Valve - Drain

1 S999-350-19 Valve - Drain

Per Spec. 3-6850 Rev. 5 dated 11/10/87
attached and made part of this order.

TECHNICAL CONTACT: B. J. Etienne 302-366-2040

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price	\$364,658.00
Alt 7 Increase	\$ 17,867.00
New Total Firm Price	\$382,525.00

Per vendor quote dated 3/2/88 by Frank Steinbruckner

SHEET ☐ FINAL

PRIORITY DATING: ALL EXECUTED BY

REQUISITION NUMBER

MARK AND SHIP AS FOLLOWS.

E. I. DU PONT DE NEMOURS & COMPANY

EXECUTED BY
R. L. Donall951780 clb
3-6850

1-0-0-

AXC-6850-W A7

XXXXXXX Wilm, DE

\$.00

GENERAL DELIVERY & RETURN

DIRECT ALL INQUIRIES TO THE ABOVE
BUYERPURCHASE ORDER NUMBER MUST BE SHOWN IN EACH ITEM PAID IN ORDER TO BE INVOICED
CENTRAL ALL INFORMATION MUST BE SHOWN IN EACH ITEM PAID IN ORDER TO BE INVOICED
TAMER & SONS, INC. 1000 W. 10TH ST. WILMINGTON, DE 19801

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EN S350-185-19

1 - Drain Valve Assembly

EN S999-350-19

1 - Spare Drain Valve Assembly

I. GENERAL

A. Scope

This specification covers materials, dimensions, tolerances, welding, and surveillance procedures for two drain valve and support frame assemblies.

B. Function of Drain Valve Assembly

The drain valve assembly will be used in a new Defense Waste Processing Facility (DWPF). This facility will prepare radioactive waste material for long term storage by converting it into a stable borosilicate glass form. The waste glass will be prepared in a glass melter which will have a life of at least two years, after which the melter will be drained. The drain valve assembly will be used to drain this melter.

C. Fabrication Quality

The valve assembly must be manufactured to meet exacting quality standards. This requirement is dictated by the unique operating environment of the DWPF melter drain valve.

Once started up, the valve must be operated by remote control for several years. There are no provisions to maintain or replace the valve during the operating life of the melter. The valve can be replaced only after the melter is shutdown and removed.

D. Materials of Construction by Du Pont

Du Pont will provide specific materials of construction required for this order. It is anticipated that all of these materials will be delivered as required in order to maintain the shipping schedule for the valve assemblies.

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E. Shipping Schedule

Time is of the essence, and the valve fabricator's quote is to be based on providing the valves by the required shipping date.

It is noted that, if any of the Du Pont supplied materials of construction are late in being delivered to the valve fabricator, the required shipping date may be changed to a later date.

II. DRAWINGS AND QUANTITIES

- A. The following equipment arrangements, assemblies and detail part drawings, including Bill of Material items and quantities as shown on Machine Drawing and Parts List (MD&PL) "originally undated", forwarded for quotation purposes are to be deleted from this specification. MD & PL sheets 1 through 25 has since been dated 9/3/85 (same date as original specification) for reference and made part of this specification.

<u>1. Drawing</u>	<u>Revision</u>	<u>Comment</u>
W-749240	1	
W-800075	1	
W-800076	1	
W-800077	1	
W-800582	2	
W-800911	2	
W-804286	1	
W-804854	2	
W-804870	1	
W-805073	0	
W-805096	0	
W-805098	1	
W-805388	3	
W-807705	0	
W-807707	1	
W-807727	0	
W-807728	1	
W-807733	0	
D-189107	1	
D-189109	2	
D-189110	1	

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<u>Drawing</u>	<u>Revision</u>	<u>Comment</u>
D-189111	1	
D-189459	2	
D-189467	3	
D-189472	2	
D-189681	1	
D-189695	0	
D-189710	0	
D-189712	4	
D-198177	1	
D-198207	0	
D-198911	0	
D-198912	0	
D-198930	1	
D-198949	0	
D-199111	2	
D-199133	0	
D-199138	2	
D-199140	2	
D-199141	2	
D-199142	2	
D-199143	2	

2. The following equipment arrangements, assemblies and detail part drawings, including Bill of Material Items and quantities as shown on Machine Drawing and Parts List Number 2308 pages 1 through 10 and 15 through 31 dated April 1, 1986 are to be deleted from this specification.

	<u>Drawing</u>	<u>Revision</u>	<u>Comment</u>
a.	D-189486-A	2	Replaced by new detail
	D-189487-A	2	drawings shown in
	D-189488-A	3	Section III.A.3.
	D-189489-A	3	
	D-189493-A	3	
	D-189494-A	4	
	D-199256-A	6	
b.	W-810632	0	Replaced by new arrangement
	W-810646	0	drawings shown in
	W-812225	0	Section II.B.
	W-812257	0	

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<u>Drawing</u>	<u>Revision</u>	<u>Comment</u>
c. D-189130	20	Replaced by new detail drawings shown in Section II.B.
D-189137	1	
D-189482	3	
D-198941	11	
D-199119	3	
D-199120	6	
D-199121	0	
D-199294	3	
D-199295	0	
D-199631	3	
D-199635	0	
D-199636	0	
D-199658-A	10	

- B. The following equipment arrangements, assemblies and Machine Drawing and Parts List Number 2308 pages 1 thru 33 dated October 17, 1986 are to be used in assembling the drain valves specified. The valve fabricator is to provide all Bill of Material items included on these drawings and fabricate the detail parts shown below. Special materials required for fabrication and other specific parts required for assembly to be provided by Du Pont are shown in Section III of this specification.

<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>	<u>Deleted Drawing Ref.</u>
W-808478	2	Drain Valve Ass'y - Sheet 2	
W-808479	4	Drain Valve Ass'y - Sheet 3	
(C) W-808480	17	Drain Valve Ass'y - Sheet 1	
W-809842	10	Drain Valve Ass'y - Sheet 8	
W-809848	11	Drain Valve Ass'y - Sheet 7	
W-810607	10	Drain Valve Ass'y - Sheet 9	
W-810640	9	Drain Valve Ass'y - Sheet 5	
(C) W-810644	21	Drain Valve Shipping Ass'y - Sheet 1	
W-812224	2	Heater Ass'y - Zones 1 & 2	

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<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>	<u>Deleted Drawing Ref.</u>
W-812226	8	Core Ass'y - Zones 1 thru 5	
W-812252	3	Drain Valve Heater Ass'y - Sheet 4	
W-812253	3	Drain Valve Heater Ass'y - Sheet 2	
W-812254	12	Drain Valve Heater Ass'y - Sheet 5	
W-812255	3	Drain Valve Heater Ass'y - Sheet 3	
W-812256	18	Core Ass'y - Zones 1 thru 5	
W-812258	0	Drain Valve Heater Ass'y - Sheet 1	
W-812259	1	Drain Valve Ass'y - Sheet 4	
W-812260	5	Drain Valve Shipping Ass'y - Sheet 2	
W-812348-A	0	Thermocouple Mounting Ass'y	
W-812348-B		Thermocouple Mounting Ass'y	
W-812348-C		Thermocouple Mounting Ass'y	
W-812348-D		Thermocouple Mounting Ass'y	
W-817424	0	Probe Bellows Ass'y	W-812225
W-817435	5	Plug Bellows Ass'y	W-812257 & W-807705
W-817437	0	Canister Bellows Ass'y Sh. 1	W-810646
W-817438	1	Canister Bellows Ass'y Sh..2	W-810632
D-188464-D	16	Gasket	
D-188464-F		Gasket	
D-188464-G		Gasket	
D-188464-K		Gasket	
D-188475-A	11	Retainer Washer	
D-188475-B		Retainer Washer	
D-188475-D		Retainer Washer	
D-189131-A	7	Strip Heater - Zone II	
D-189132-A	7	Strip Heater - Zone III	
D-189133-A	11	Strip Heater - Zone IV	
D-189134-A	6	Strip Heater - Zone V	

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	<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
	D-189475-A	6	Upper Shell
	D-189475-B		Sleeve
	D-189475-C		Spacer
	D-189475-D		Support Bar
	D-189479-A	11	Support T/C
	D-189479-B		Support T/C
	D-189479-C		Support T/C
	D-189479-D		Support T/C
	D-189479-E		T/C Support Bracket
(C)	*D-198180-A	10 For #1	Shipping Frame Sheet 2
		14 For Spare	
(C)	*D-198560-A	0 For #1	Dowell
(C)	*D-198560-B	5 For Spare	Dowell
	D-198783-A	30	Upper Shell & Core
	D-198783-B		Alignment Rod
	D-198910-A	4	Probe Aligner
	D-198910-B		Rod
	D-198910-C		Clamp Ring
	D-199102-A	8	Lifting & Shipping Bracket
	D-199137-A	2	Nut
	D-199137-B		Sleeve Nut
	D-199137-C		Sleeve
(C)	D-199261-A	5 For #1	Angle
	D-199261-B	6 For Spare	Spacer
(C)	*D-199261-C		Pipe
	D-199261-D		Retainer
	D-199291-A	6	Switch Mtg Box
	D-199291-B		Actuator Rod Guide
	D-199291-C		Spacer

*Modifications shown required for spare drain valve only.

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<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
D-199300-A	12	Switch Mtg. Box
D-199300-B		Switch Cover
D-199300-C		Actuator Rod Guide
D-199300-D		Actuator Rod
D-199300-E		Spacer
D-199300-F		Bushing
D-199630-A	14	Actuator Arm
D-199630-B		Switch Mtg. Box
D-199630-C		Switch Cover
D-199632-A	5	Switch Cover
D-199632-B		Retainer
D-199632-C		Button
D-199632-D		Actuator Rod
D-199667-A	0	Half Cap
D-199667-B		Half Cap
(C) D-199669-A	3	Shell - Zone 3 - Sheet 1
D-199670	1	Shell - Zone 3 - Sheet 2
D-199671-A	1	Shell - Zone 5
D-199672-A	4	Gland Follower
D-199672-B		Ring
D-199672-C		Retainer
(C) D-199673-A	4	Shell - Zone 4
D-199673-B		Shell - Zone 4
D-199674-A	24	Lower Intersection Core
D-199675-A	4	Probe

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	<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>	<u>Deleted Drawing Ref.</u>
	D-808583-A D-808583-B	5	Shipping Plates Plate	
	D-808584-A D-808584-B D-808584-C D-808584-D	1	Plate Gasket Plug Gasket	
	D-812139	1	Support Frame - Sheet 2	
(C)	*D-812140	4 For #1 6 For Spare	Support Frame - Sheet 5	
(C)	*D-812141-A	11 For #1 13 For Spare	Support Frame - Sheet 1	
(C)	*D-812142	7 For #1 8 For Spare	Support Frame - Sheet 3	
	D-812143	4	Support Frame - Sheet 4	
(C) (D) (D) (D)	D-816392-A	4	Column Spacer Wrench Stop Sleeve Stop Sleeve	D-199121-A D-199121-C D-199121-B D-199121-B
(C)	D-816397-A	5	Lower Flange (Probe)	D-189482-A
	D-816398-A	3	Inter. Flange (Probe)	D-199658-B
(C)	D-816399-A	3	Upper Flange (Probe)	D-199658-A
	D-816888-A	0	Drain Valve Heater	D-189130-A
(C) (C)	D-816890-A *D-816890-B	0 For #1 2 For Spare	Bracket Bracket	--- ---

*Modifications shown required for spare drain valve only.

C = Change N = New
 2515W/jel R5/clb

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	<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>	<u>Deleted Drawing Ref.</u>
	D-818781-A	0	Column	D-189137-A
	D-818781-B		Bottom Spacer	D-189137-B
	D-818781-C		Top Spacer	D-189137-C
	D-818781-D		Sleeve	D-189137-D
(C)	D-818784-A	15	Plug	D-198941-A
	D-818784-B		Gland Ring	D-198941-B
	D-818784-C		Packing Follower	D-198941-C
	D-818784-D		Spring Retainer	D-198941-D
(D)				D-198941-E
(D)				D-198941-F
	D-818784-G		Post	D-198941-G
(C)	D-818786-A	6	Intermediate Plate (Plug)	D-199120-B
	D-818787-A	3	Lower Plate (Plug)	D-199120-A
	D-818788-A	3	Upper Plate (Plug)	D-199119-A
(C)	D-818790-A	8	Upper Plate (Canister)	D-199294-A & D-199295
	D-818791-A	2	Lower Plate (Canister)	D-199648-A
	D-818792-A	2	Intermediate Flange	D-199631-A
	D-818793-A	3	Shield	-
(C)	D-818794-A	6	Guide	D-199635-A
	D-818794-B		Rod	D-199635-B
	D-818794-C		Guide	D-199635-C
	D-818794-D		Cap	D-199635-D
	D-818794-E		Spacer	D-199635-E
				D-199636-A
				&
				D-199636-B

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Deleted
 Drawing
 Ref.

	<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>
(N)	**D-831884-A	0	Bracket
(N)	**D-831884-B		Leveling Brace
(N)	**D-831884-C		Spacer
(N)	**D-831884-D		Angle
(N)	D-832212-A	4	Spherical Bushing (Connex)
(N)	D-832212-B		Spherical Bushing (Concave)
(N)	D-832212-C		Sleeve
(N)	D-832212-D		Spacer
(N)	D-832212-E		Stop
(N)	D-832212-F		Guide
(N)	D-832212-G		Guide (For Plug)
(N)	**D-832214-A	0	Shipping Frame Sheet 1

- (N) C. The valve fabricator is to debur 4 plates for each Drain Valve Assembly shown on Attachment B shipped from Chicago Bridge & Iron Company and weld one 6" long 1/2-13UNC-2A stud to each plate. When completed 4 plates with studs are to be shipped with each Drain Valve Assembly. In addition the valve fabricator is to provide and ship the following Bill of Material items with each Drain Valve Assembly.

ITEM NO.	NAME	MAT'L	SIZE & REMARKS	# REQ'D FOR 1 ASSY
1	Hex HD Cap SCR	ASTM A193-88	5/8-11 UNC x 1-1/2 LG	8
2	Self Locking Nut	400 SST	SPS Flexloc 99FA-813 1/2-13 UNC-28	4
3	Hex Hd. Cap Screw	18-8 SST	3/4-10 UNC x 3-3/4 LG	4

**Required for spare drain valve assembly only.

C = Change N = New
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III. MATERIALS OF CONSTRUCTION

A. Du Pont will provide the following to the valve fabricator:

1. All Inconel 690 material including Inconel 690 weld filler metal required for fabrication of selected detail parts as called for in Section II.
2. All alumina electrical isolators fabricated in accordance with requirements on detail part drawings listed below:

<u>Drawing</u>	<u>Revision</u>	<u>Description</u>
D-187871-D	33	Isolator
D-187871-L		Isolator
D-187871-N		Isolator
D-187871-P		Isolator
D-187871-R		Isolator
D-187871-S		Isolator
D-187871-T		Isolator
D-187871-U		Isolator
D-187871-X		Isolator
D-189108-A	7	Outer Isolator
D-189108-B		Outer Isolator
D-189108-C		Lead Isolator
D-189108-D		Lead Isolator
D-189108-E		Lead Isolator
D-189150-A	6	Inner Isolator
D-189150-B		Inner Isolator
D-189451-A	7	Inner Isolator
D-189451-B		Isolator Ring
D-189451-C		Isolator Spacer
D-189451-D		Isolator
D-189455-A	1	Outer Isolator
D-189455-B		Outer Isolator
D-189455-C		Isolator Strip

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<u>Drawing</u>	<u>Revision</u>	<u>Description</u>
D-189456-A	1	Isolator Strip
D-189456-B		Isolator Strip
D-189456-C		Isolator Strip
D-189456-D		Isolator Strip
D-189456-E		Isolator Strip
D-189456-F		Isolator Strip
D-189456-G		Isolator Strip
D-189456-H		Isolator Strip
D-189456-J		Isolator Strip
D-189463-A	5	Isolator Ring
D-189463-B		Inner Isolator
D-189463-C		Inner Isolator
D-189463-D		Inner Isolator
D-189463-E		Inner Isolator
D-189464-A	2	Inner Isolator
D-189464-B		Inner Isolator
D-189464-D		Outer Isolator
D-189464-E		Lead Isolator
D-189464-F		Lead Isolator
D-189464-G		Isolator Ring
D-189465-A	5	Inner Isolator
D-189465-B		Inner Isolator
D-189465-C		Isolator Ring
D-189465-D		Outer Isolator
D-189465-E		Outer Isolator
D-189466-A	6	Inner Isolator
D-189466-B		Inner Isolator
D-189466-C		Inner Isolator
D-189466-D		Inner Isolator
D-189496-A	4	Inner Isolator
D-189496-B		Inner Isolator
D-189496-C		Isolator
D-189497-A	3	Inner Isolator
D-189497-B		Inner Isolator

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<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
D-189676-A	3	Inner Isolator
D-189676-B		Inner Isolator
D-189676-C		Outer Isolator
D-189676-D		Outer Isolator
D-189677-A	2	Outer Isolator
D-189677-B		Outer Isolator
D-189677-C		Outer Isolator
D-199652-A	0	Inner Isolator
(Same as D-189467-A, Rev. 5)		
D-199652-B		Outer Isolator
(Same as D-189467-C, Rev. 5)		
D-199652-C		Isolator Ring
(Same as D-189466-E, Rev. 5)		
D-199663-A	0	Inner Isolator
D-199663-B		Outer Isolator

3. All bellows capsules fabricated in accordance with requirements on detail part drawings listed below:

<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
W-816578	0	Adapter Bellows Shipping & Handling Assy
W-816579	0	Probe Bellows Shipping & Handling Assy (Lower)
W-816580	0	Plug Bellows Shipping & Handling Assy
W-816581	0	Canister Bellows Shipping & Handling Assy
W-817412	0	Probe Bellows Shipping & Handling Assy (Upper)

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<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
D-811176	0	Adapter Bellows Sh. 2
D-811177	0	Plug Bellows Sh. 2
D-811178	0	Probe Bellows Sh. 2
D-811179	0	Canister Bellows Sh. 2
D-816387	1	Adapter Bellows Sh. 1
D-816388	2	Plug Bellows Sh. 1
D-816389	2	Probe Bellows Sh. 1
D-816390	2	Canister Bellows Sh. 1

Drawings shown above replaces original drawings identified in Section II.A.2.a.

4. All Zircar® fibrous ceramic insulation fabricated in accordance with requirements on detail part drawings listed below:

<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
D-189458-A	0	Insulator Ring
D-189458-B		Insulator Ring
D-189458-C		Insulator Ring
D-189458-D		Insulator
D-189679-A	0	Insulator
D-189679-B		Insulator
D-189682-A	2	Insulator
D-189682-B		Insulator
D-189682-C		Insulator
D-198761-A	0	Insulator
D-808578-A	0	Insulator

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<u>Drawing No.</u>	<u>Revision</u>	<u>Description</u>
D-808579-A	0	Insulator Ring
D-808579-B		Insulator Ring
D-808579-C		Insulator
D-808579-D		Insulator
D-808579-E		Insulator
D-808579-F		Insulator

B. The valve fabricator is to provide the following materials for fabrication of the valve and support frame:

1. All stainless steels
2. All Hastelloy C-276
3. All miscellaneous materials not specifically spelled out as being provided by Du Pont.

C. Material Certification

Mill test reports for fabricator supplied stainless steels and Hastelloy C-276, including both chemical analysis and mechanical properties, shall be submitted to Du Pont per Section VIII.F.

IV. WELDING

A. Governing Specification

The welding on this assembly shall be done in accordance with the procedures and requirements of the latest ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

B. Procedure

1. General

- a. Surfaces to be welded must be made free of oxide by machining, grinding or pickling.
- b. Cleanliness is essential. The weld areas and adjacent areas and weld wire must be freed of all contaminants (marking materials, shop dirt, oil, abrasive materials, etc.) by grinding and solvent cleaning with clean wiper and solvent.

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- c. Weld only with the GTAW process using filler metal supplied by Du Pont (See Section III.A.1).
 - d. Where the inside or backside of the joint is accessible, the root must be back excavated to sound material as indicated by liquid penetrant inspection.
 - e. Where the inside or backside of the joint is not accessible, the root must be protected by inert gas back-up.
 - f. The oxide on each bead must be removed (preferably by a clean Flapper wheel) before depositing the next bead.
2. The valve fabricator shall submit written procedures for welding 304L stainless steel, welding Inconel® 690 to 304L stainless, Hastelloy C-276 to 304L stainless, and for welding any other combination of metals called for on the drawings. These procedures will be reviewed and approved by Du Pont prior to fabrication.
3. Liquid Penetrant Examination
- a. Liquid penetrant examination shall be in accordance with ASME Section VIII, Division 1, Mandatory Appendix 8.
 - b. Testing solutions shall have low contents of mercury, sulfur, halogens and other low melting materials. All traces of solutions shall be removed and the surfaces solvent cleaned and dried, prior to deposition of additional weld metal and after final testing.
 - c. All welds shall be subjected to liquid penetrant examination as follows:
 - 1. Root pass and cover pass of fillet welds and full penetration welds deposited from one side only. In cases where thick joints are involved, the root liquid penetrant examination may be deferred until the second or third pass.

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2. Back chip and cover passes of all but welds deposited from both sides, and other full penetration welds deposited from both sides.
 3. Areas where temporary attachments were welded to parent metal.
 - d. Fabricator personnel performing and interpreting liquid penetrant examinations shall be qualified as outlined in Section VIII, Division 1, Appendix 8, ASME Code.
4. Radiographic Examinations
- a. Welds requiring radiograph examination are noted on the drawings.
 - b. Radiographs shall be made using fine grain film and lead screens and shall be in accordance with UW-51, Section VIII, Division 1, ASME Code.
 - c. The valve fabricator shall maintain radiographic records, including layout sketches and reader sheets.
 - d. Fabricator personnel performing radiography and interpreting the results shall be certified as described in the recommended practice SNT-TC-1A of the American Society of Nondestructive Testing. The certified interpreter shall sign and date each radiographic reader sheet.

V. TESTING REQUIREMENTS

At final inspection, the following tests must be completed:

- (C)
- A. Both the probe and the plug shall be demonstrated to move freely, without binding, through their full stroke lengths, by applying pressure to the bellows using instrumentation shown on Attachment A, to be provided by the fabricator for each Drain Valve Assembly. Specific pressures for operation of probe, plug and canister bellows will be provided by the Du Pont design engineer. The test procedures shall be approved by the Du Pont design engineer and the Du Pont QA/R before this test.

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- B. Continuity of the strip heaters shall be verified using a digital micro-ohmmeter. Heater resistance will be in the range of 1 to 100 milli-ohms. Specific resistance values will be provided by the Du Pont design engineer and the continuity check shall be witnessed by the Du Pont QA/R.

VI. PACKAGING

The valves shall be packaged in sturdy wood crates with weather protection. Packaging shall be such as to ensure against damage during shipping and handling. An enclosed vehicle shall be used for shipment of the valves.

The packaging shall allow for handling of the crate and valve by a fork lift truck.

VII. SHIPPING INSTRUCTIONS

- A. The Drain Valve Assembly (EN 350-185-19) is to be shipped to:

(C) E. I. du Pont de Nemours & Co., Inc.
Construction Project Manager
Central Shops Receiving
Dunbarton, SC 29808
Attn: Material Expediter-Construction Bldg. TC-1
(For use on Bechtel Order AXC-21085)

- B. The Spare Drain Valve Assembly (EN S999-350-19) is to be held at the fabricators shop until further shipping instructions are forwarded.

VIII. SURVEILLANCE (INSPECTION)

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QA/R) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each surveillance is required by telephoning (302) 451-0200.
2. When major components or service are obtained from subvendors, the QA/R may check these items at the point of manufacture. It is the valve fabricator's responsibility to include Du Pont surveillance and notification requirements in suborders.

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B. Fabricator's QA Manual/Procedure Requirements

1. The valve fabricator shall have, in place, and functioning a material control procedure which addresses the control, segregation, identification, and use of the material to be used, including welding consumables. Special care should be taken with Du Pont furnished material.
2. The valve fabricator shall have, in place, and functioning a procedure(s) which address special processes. Special processes are defined as: welding, heat treatment (if applicable), nondestructive examination, and testing. The procedure(s) shall address: using written procedures for operations to be performed and the qualification of personnel.
3. The valve fabricator shall have, in place and functioning a procedure for the calibration of measuring and test equipment. Calibration standards shall be traceable to nationally recognized standards.
4. The valve fabricator may utilize their own procedure for the control of nonconformances or refer any nonconformances to the QAFR for resolution.
5. A Quality Control Manual which satisfies the ASME Code, Section VIII, Division 1, Appendix 10 will also satisfy the intent of Paragraphs 1 through 4 above.

C. Prefabrication Surveillance Meeting

The first visit will be initiated by S. B. Hicks, QA Engineer, (302) 366-2116. The inspection and specification requirements will be reviewed with the valve fabricator's manufacturing and quality control personnel. A tentative schedule of future inspection visits will be established at this meeting.

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D. Schedule

Fabricator shall request inspection at the following points:

1. Preliminary Visit - After material has been received.
2. Intermediate Visit - To witness initial liquid penetrant examinations and check detail parts.
3. Final Visit - To witness assembly and testing. (Joint inspection)

E. Instructions

The following inspections will be performed by the QA/R:

1. Prefabrication Surveillance Meeting
 - a. Discuss, in detail, specification and drawing requirements with the fabricator.
 - b. Discuss the requirements of the surveillance specification.
 - c. Investigate the proposed sequence of fabrication and adjust the surveillance schedule to fit that sequence.
2. Preliminary Visit - After material has been received.
 - a. Review the fabricator's welding procedures assuring that they are in accordance with the ASME Code, Section IX.
 - b. Review the qualifications of the applicable welders assuring they are in accordance with the ASME Code, Section IX.
 - c. Review the fabricator's material control system, assuring it is in accordance with the written procedures and judging the adequacy of the system to prevent the use of Du Pont furnished material on other work.

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3. Intermediate Visit - To witness initial liquid penetrant examinations, and check detail parts.
 - a. Review the fabricator's Non-Destructive Examination (NDE) procedures assuring they are in accordance with specified requirements.
 - b. Review the qualifications of the NDE personnel assuring they have been properly qualified.
 - c. Witness the initial liquid penetrant examinations assuring that procedures are being followed and examinations are performed by qualified personnel. Review and initial the test certificates for this examination. If the testing was satisfactorily performed, allow the fabricator to proceed with the remaining root-pass liquid penetrant examinations as long as test certification is provided for each test. Otherwise, witness all root-pass examinations.
 - d. Review any machining or welding in process.
 - e. Witness any dimensional inspections of detail parts being performed at this time.
 - f. Review specified finishes to assure they are as specified.
 - g. Assure that proper materials are being used.
4. Final Visit - To witness assembly and testing (Joint Inspection)
 - a. Witness the final liquid penetrant examination of all welds.
 - b. Review and interpret all radiographs pertaining to the valves, noting the source, source size, film, penetrometer used, and the qualifications of the radiographer. Initial the radiographic reader sheets for all radiographs reviewed.
 - c. Witness the assembly of the valves, noting any difficulties encountered during assembly.

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- d. After valve assembly, witness any electrical continuity testing conducted between heater elements.
- e. Witness bellows actuators being energized and stroked. Note any obvious shipping damage or mechanical deformation of the bellow assemblies.
- f. Witness any disassembly (if applicable) of the valves for shipment. Review the fabricator's precautions to protect fragile parts during shipment. Review fabricator's plans to place shipping indicators on the packages of the shipment (if applicable).
- g. Review any coatings and preparations for shipment.
- h. Apply acceptance tags when the valves are released for shipment.

F. Documentation

- 1. The fabricator shall prepare a documentation inventory transmittal sheet (listing all documents requested and number of pages) and attach to each set of documentation.
- 2. Each sheet of documentation shall list Du Pont P.O. number, equipment identification, and be consecutively numbered.
- 3. The Du Pont QAFR shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.
- 4. The fabricator shall forward documentation at time of shipment as follows:
 - a. One complete set (including signed documentation inventory transmittal sheet) to be included with shipment and marked as follows:

Attn: Receiving Supervisor - Construction
Savannah River Plant

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- b. Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

Attn: Construction Material Expeditor -
Building CAB/CS

- c. One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108

Attn: S. B. Hicks

- 5. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.
- 6. The supplier shall submit the following documentaton:
 - a. Mill Test Reports
 - b. Certification for the pressure test of the bellows
 - c. Liquid penetrant logs
 - d. Liquid penetrant material certifications
 - e. Radiographic logs
 - f. Radiographic reader sheets

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YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING CONSTRUCTION DIMENSION DRAWINGS IN WEEKS AFTER RECEIPT OF PURCHASE ORDER.

- A. One reproducible is required for Du Pont design and construction purposes.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

Plant	Savannah River
Project	9S1780
Du Pont Order No	AXC-6850-W
EN Numbers	S350-185-19
	S999-350-19

- C. The following information is required:

Layout and orientation
Overall dimensions
Mounting or foundation dimensions
Connection locations

- D. In addition to Construction Dimensions prints, we require eight (8) copies of the following within 4 weeks of purchase order. (Also to be submitted to Procurement L52S per purchase order.)

Catalog Sheets
Spare Parts Lists
Operating and Maintenance Instructions
Lubrication instructions, if separate from maintenance instructions
Maintenance and disassembly clearances
Nameplate data

Fabrication is released upon receipt of purchase order.

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ATTACHMENT A BELLOWS PNEUMATIC TEST SCHEMATIC

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
FACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2671) TEL: 803-725-6211 WU AUGUSTA GA)

DATE		
MO	DAY	YR
10	6	88

ORDER NO.
AXC685374

VC: 06925

TO

(716) 693-3840
Keller Technology
2320 Military Road
P. O. Box 103 (Buffalo 14217)
North Tonawanda, NY 14150

**FURNISH
PACKING**

LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE PLAINED
SHOWN ON EACH ITEM PACKAGE, CORRESPONDENCE AND
INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY DATE	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SDC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER. DD-E-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11	DD-E-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11
		☒	☐

CASH TERMS	VIA	FOB
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ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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ELECTRODES, ETC.

THIS ALTERATION IS TO INCLUDE CHANGES MADE TO
SPECIFICATION AS SUMMARIZED ON PAGE AA-10.

Per Spec. 3-6353 Rev. 7 Dated 09/23/88
Attached and made part of this order.

TECHNICAL CONTACT: J. Scafaria 302-366-4510

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price	\$1,617,176.89
Alt 9 Increase	\$ 55,486.00
New Total Firm Price	\$1,672,662.89

SHEET	FINAL	PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
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MARK AND SHIP AS FOLLOWS:
TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.
DEST

AXC-6853-d A9

EXECUTED BY *R. W. MOYER*

ISSUING POINT
XY AUGUSTA, GA. Wilm, DE

051780
3-6853

ORIGINATOR
1-0-0-0

BUYER
AMOUNT

ITEM NO.	GENERAL LEDGER & COST CODE
----------	----------------------------

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

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(N)

SUMMARY OF CHANGES PER REVISION 7

Items 15A & 22A - Melt Level Dip Tube Assemblies

- Added two new melt level dip tube assemblies, EN S999-350-15-21 & EN S999-350-50-21 to replace EN S999-350-15-20 & EN S999-350-50-20. (Ref. Memo DU0000592 to Keller dated 9/13/88-Revised.) & (Ref. Memo DU0000597 to Keller dated 9/26/88)

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I. IDENTIFICATION

A. Canyon Melter Components

<u>Item No</u>	<u>Engineering No</u>	<u>Description</u>	<u>Qty</u>
1	S350-185-14	Electrodes	1 set
2	S350-185-16	Dome Heater Assy	1
3	S350-185-15	Melt Thermowell Assy	1
4	S350-185-15-5	Melt Thermowell Assy	1
5	S350-185-15-10	Vapor Thermowell Assy	1
6	S350-185-15-20	Melt Level Dip Tube Assy	1
7	S350-185-15-30	TV Camera Support Frame Assy	2
8	S350-185-13	Feed Tube & Support Frame Assy	2
	S350-185-3-2	Shipping/Storage Fixture	2
9	S350-185-18	Riser/Pour Spout Heater Assy	1
	S350-185-18-10	Shipping/Storage Fixture	1

B. Spare Melter Components

The following is a duplicate set of Items 1 through 9:

<u>Item No</u>	<u>Engineering No</u>	<u>Description</u>	<u>Qty</u>
10	S999-350-14	Electrodes	1 set
11	S999-350-16	Dome Heater Assy	1
12	S999-350-15	Melt Thermowell Assy	1
13	S999-350-15-5	Melt Thermowell Assy	1
14	S999-350-15-10	Vapor Thermowell Assy	1

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	<u>Item No</u>	<u>Engineering No</u>	<u>Description</u>	<u>Qty</u>
	15	S999-350-15-20	Melt Level Dip Tube Assy	1
(N)	15A	S999-350-15-21	Melt Level Dip Tube Assy	1
	16	S999-350-15-30	TV Camera Support Frame Assy	2
	17	S999-350-13	Feed Tube & Support Frame Assy	2
		S999-350-13-2	Shipping/Storage Fixture	2
	18	S999-350-18	Riser/Pour Spout Heater Assy	1
		S999-350-18-10	Shipping/Storage Fixture	1

C. Operating Spares

The following is a duplicate set of Items 3 through 8:

	<u>Item No</u>	<u>Engineering No</u>	<u>Description</u>	<u>Qty</u>
	19	S999-350-50	Melt Thermowell Assy	1
	20	S999-350-50-5	Melt Thermowell Assy	1
	21	S999-350-50-10	Vapor Thermowell Assy	1
	22	S999-350-50-20	Melt Level Dip Tube Assy	1
(N)	22A	S999-350-50-21	Melt Level Dip Tube Assy	1
	23	S999-350-50-30	TV Camera Support Frame Assy	2
	24	S999-350-50-40	Feed Tube & Support Frame Assy	2
		S999-350-50-42	Shipping/Storage Fixture	2
	25	S999-350-50-31	Borescope Tube	1

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D. Miscellaneous Parts

<u>Item No</u>	<u>Engineering No</u>	<u>Description</u>	<u>Qty</u>
	S350-185-10-12	Shell Parts - Canyon Moller	1 Set
	S999-350-10-12	Shell Parts - Spare Moller	1 Set
	S999-350-50-43	Inspection & Assembly Fixture	2
	S999-350-50-44	Seal Test Assembly	1
		Replacement Seals (C-Rings & Clips)	1 Set

II. SCOPE

A. General

This specification covers requirements and procedures for fabricating, testing, inspecting, and shipping auxiliary components for two glass melter vessels plus spares.

B. Items by Vendor

The vendor is responsible for providing:

1. Items 1 through 25 and Miscellaneous Parts, Paragraphs IV.C., D., E., & F., including the Bill of Material items.
2. All material except that listed in Paragraph V.A.
3. Distribution of Inconel 690 material per Paragraph V.A.1.g.
4. Material control procedures per Paragraph V.C.
5. Welding procedures per Paragraph VI.F.2.
6. Weld samples per Paragraph VI.F.3.
7. Quality Assurance documents per Paragraph XII.

C. Items Furnished by Others

Du Pont shall furnish Inconel 690 material and various components per Paragraph V.A.

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D. Work By Others

All items furnished on this order shall be shipped to another location, for assembly with the melter vessel. This phase will verify mechanical fit-up of all components with the melter vessel prior to final shipment to the Savannah River Plant. Model photograph Figures 1 thru 4 show successive stages of this check out assembly.

III. REFERENCE DOCUMENTS

A. Standards

Unless otherwise specified, work under this specification shall be performed in accordance with the following Du Pont Standards:

<u>Number</u>	<u>Latest Date</u>	<u>Title</u>
SW300M	January 1982	Austenitic Stainless Steel, Type 300 Series
SP3D	December 1982	Identification of Carbon Steel, Aluminum, Stainless Steel, and Other Alloys
SG5S	December 1981	Fabrication of Welded Equipment
SG5.1S	June 1981	Welding Requirements For Non-Code Equipment
SW33.1W	Sept 1980	Welding Nickel, Monel, Inconel, and Copper-Nickel Sheet and Plate with the Direct Current GTAW Process
SW33.2W	Sept 1980	Welding Nickel, Monel, Inconel, and Copper-Nickel Pipe with the Direct Current GTAW Process
SO2A	Jan 1983	Gaskets & Packings

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B. Drawings for Information

1. The following drawings are submitted for information only:

<u>Drawing No</u>	<u>Rev</u>	<u>Description</u>
W-732366	19	Melter Section
W-804866	65	TU Basis Dwg Sht 1
W-807872	30	TU Basis Dwg Sht 2
PV-184722		Melter Assembly
D-188694	33	Anchor Flange
D-188688	11	ACME Stud
D-188689	6	Standard Dowel

The above drawings are offered to illustrate the typical means of anchoring components. Specific components anchoring will vary in detail.

B. Drawings for Information

D-188792	1	Collar
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2. Model Photographs

Figure 1	Melter Support Frame
Figure 2	Melter Shell Installed on Support Frame
Figure 3	Assembly of Upper Frame, Melter Vessel, and Support Frame
Figure 4	Final Assembly of Melter Vessel and Frame on Support Beams (as installed in melt cell)

3. Color print of melter section.

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C. Drawings for Fabrication

Drawings are numerically listed below for control purposes,
 see Paragraph IV.C for detail breakdown by components.

1.	<u>Drawing No.</u>	<u>Rev</u>	<u>Drawing No.</u>	<u>Rev</u>
	W-743909	34	W-801544	12
			W-801815	11
			W-804860	0
	W-745987	53	W-804887	0
	W-746741	75	W-812971	1
	W-746742	81	W-814474	20
	W-746743	70	W-817421	0
	W-747380	28	W-817436	0
	W-747898	27	W-820958	4
	W-747900	5	W-826534	1
	W-748249	0	W-826535	1
	W-748395	38	W-826813	0
	W-748396	47	W-831497	1
	W-748706	38	W-837562	2
	W-748707	40	(N) W-839573	2
	W-748708	10		
	W-748709	31		
	W-748710	12		
	W-800559	39		

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<u>Drawing Number</u>	<u>Rev</u>	<u>Drawing Number</u>	<u>Rev</u>	<u>Drawing Number</u>	<u>Rev</u>
D-187164	13	D-188696	10	D-815444	0
D-187373	7	D-188697	18	D-815449	8
D-187374	5	D-188698	41	D-816121	3
D-187375	1	D-188700	10	D-816378	10
D-187602	40	D-188705	18	D-816394	16
D-187621	2	D-188706	12	D-818783	0
D-187634	8	D-188708	17	D-818789	0
D-187645	0	D-188774	16	* D-819502	1
* D-187871	39	D-188775	9	* D-819588	0
D-187874	0	D-188785	13	* D-819589	2
D-188377	68	D-188786	20	D-822023	0
D-188378	58	* D-188787	18	D-822992	1
* D-188379	8	* D-188788	8	D-822993	1
D-188380	64	* D-188789	9	D-822994	1
D-188381	59	* D-188790	7	D-822996	1
D-188382	56	D-188791	19	D-822998	1
D-188383	8	* D-188792	3	D-824847	1
D-188384	42	D-188800	15	D-827132	0
D-188385	23	D-189701	16	D-827133	0
D-188386	58	D-189717	6	D-827134	0
D-188399	18 (C)	D-189723	48	D-827135	2
D-188400	11	D-198204	7	D-827136	0
D-188452	16	D-198209	1	D-827137	0
D-188453	34	* D-198210	2	D-830774	1
D-188454	21	D-198215	0	D-832202	1
(N) * D-188463	0	D-198216	0	D-837602	0
D-188464	16 (N)	D-198445	3	D-837603	0
* D-188465	5 (N)	D-198446	0		
(C) D-188468	3 (N)	D-198447	0		
D-188474	8 (N)	D-198451	4		
D-188475	12	D-198789	9		
D-188678	14	D-198796	5		
D-188680	3	D-198926	24		
D-188682	17	D-198935	0		
D-188683	19	D-199260	6		
D-188684	33	* D-199264	3		
D-188685	10	D-199660	11		
D-188686	10	D-808599	0		
D-188687	26	D-808600	0		
D-188693	33	D-811183	2		
D-188695	52	D-815265	0		

*These parts supplied by Du Pont.

N = New C = Change
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IV. DESCRIPTION OF COMPONENTS

A. Application

1. Melter Auxiliary Components

The components furnished on this order will monitor and control operation of a glass melter, which will be installed and operated in the Future Defense Waste Processing Facility (DWPF), at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

The melter vessel, Drawing PU-184722, consists of a water jacketed shell and top head, with nozzles for supporting the auxiliary components.

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary components installed.

Prior to its installation in the DWPF melt cell (operating area), the melter vessel is permanently assembled and piped up to a frame having provisions for remote handling, and precise positioning, within the melt cell. Model photographs of the melter and frame, in various stages of assembly, are shown in Figures 1 through 4. A color print of the melter section identifies the auxiliary component location.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight down heaters above the melt pool. Molten glass is poured via differential pressure, through the riser/pour spout heater assembly, into stainless steel canisters.

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B. Critical Fabrication Requirements

Remote Handling

After the melting operation becomes radioactive, all equipment in the melt cell must be installed and removed remotely using an overhead crane. This includes the melter/frame assembly, all auxiliary components mounted on the melter top head nozzles, and the connecting service piping (jumpers). Each auxiliary component on the top head, and its respective jumper, must be interchangeable with operating spares, and with future (spare) melter vessels. This requires precise and exacting fits between all top head components and the respective mating dowel and flange assemblies.

C. Fabricated Equipment - Canyon Melter Components

The vendor shall fabricate Items 1 Through 24 as follows:

1. Item 1 - EN S350-185-14 - One (1) Set of Electrodes

Two (2) upper and two (2) lower units.

a. Lower Electrodes

Two (2) Lower Side Electrode Assemblies per Drawing W-743909-A, including the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Electrode Assy</u>	<u>Total Qty Per Melter</u>
D-187373-A	Side Electrode, Sh 1	1	2
D-187374	Side Electrode, Sh 2	-	-
D-187375	Side Electrode, Sh 3	-	-
D-187634 A	Electrode Retainer	1	2
D-187634-B	Clamp	1	2

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b. Upper Electrodes

Two (2) Upper Side Electrode Assemblies per
 Drawing W-743909-B, including the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Electrode Assy</u>	<u>Total Qty Per Melter</u>
D-187373-B	Side Electrode, Sh 1	1	2
D-187374	Side Electrode, Sh 2	-	-
D-187375	Side Electrode, Sh 3	-	-
D-187634-A	Electrode Retainer	1	2
D-187634-B	Clamp	1	2

c. Electrode Installation Components

One set of components per W-804887, and W-743909,
 including Bill of Material Items 1 through 9, 11, and
 12. The vendor shall furnish only those items listed
 below. Du Pont shall furnish all other items shown on
 drawing for final assembly of components to melter.

<u>Drawing No</u>	<u>Description</u>	<u>Qty Electrode Assy</u>	<u>Total Qty Per Melter</u>
D-187634-C	Gland Follower	1	4
D-188464-A	Gasket	2	8
D-188464-B	Gasket	1	4
D-188464-D	Gasket	8	32
D-188474-A	Adapter Flange	1	4
D-188474-B	Packing Follower	1	4
D-188475-C	Retaining Washer	4	16

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Note: Detail (16) 187871-A, (16) B and (4) 188463-A, (4) B, (4) C and (8) 188465-B will be furnished by Du Pont.

2. Item 2 - EN S350-185-16 - Dome Heater Assembly

a. Dome Heater Assembly

One (1) Dome Heater Assembly per Drawing W-812971, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>
D-187602-A	Dome Heater	4
D-187602-B	Dome Heater	4
D-187621-A	Jumper	4

- b. Dome Heater Installation Components per W-812971. The vendor shall furnish only those items listed below. Du Pont shall furnish all other items shown on drawing for final assembly of components to melter.

<u>Drawing No</u>	<u>Description</u>	<u>Total Qty</u>
D-188464-D	Gasket	64
D-198216-A	Gasket	16
D-188475-B	Retaining Washer	32
D-198215-A	Retainer	8

Note: Detail (32) 187871-D, (32) Y and (8) 198210-A, (8) B, (4) C, (4) D, (4) E, (4) F will be furnished by Du Pont.

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3. Item 3 - EN S350-185-15 - Melt Thermowell Assembly

- a. One (1) Melt Thermowell Assembly (Nozzle E) per Drawing W-746741, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty</u>
D-188381-A	Bridge and Well tube	1
D-188468	Nut Block	-
D-199260	Connector Details	-
D-188380 A	Electrical Connector	1
D-199660-C	Support Sleeve	1
D-199660-D	Retainer	1
D-199660-B	Collar	1
D-199660-E	Ring	1
D-188464-D	Gasket	8
D-188464-M	Gasket	2
D-188475-B	Retaining Washer	4
D-816378-A	Bail	1
D-189723-B	Pin	2

NOTE: Detail (1) D-187871-C, (4) -D, (4) -E and (1) D-199264-A will be furnished by Du Pont.

4. ITEM 4 - EN S350-185-15-5 - Melt Thermowell Assembly

- One (1) Melt Thermowell Assembly (Nozzle C4) per Drawing W-746743, including Bill of Materials items, and the following details:

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<u>Drawing No</u>	<u>Description</u>	<u>Qty</u>
D-188378 A	Bridge and Well Tube	1
D-188468	Nut Block	
D-199260	Connector Details	
D-188380-A	Electrical Connector	1
D-199660-C	Support Sleeve	1
D-199660-D	Retainer	1
D-199660-B	Collar	1
D-199660-E	Ring	1
D-188464-D	Gasket	8
D-188464-M	Gasket	2
D-188475-B	Retaining Washer	4
D-189723-A	Bail	1
D-189723-B	Pin	2

NOTE: Detail (1) D-187871-C, (4) -D, (4) -E, and (1) D-199264-A will be furnished by Du Pont.

5. ITEM 5 - EN S350-185-15-10 - Vapor Thermowell - Canyon Melter

One (1) Vapor Thermowell Assembly (Nozzle C3) per Drawing W-746742, including Bill of Materials items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty</u>
D-188377-A	Bridge and Well Tube	1
D-188468	Nut Block	
D-199260	Connector Details	

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<u>Drawing No</u>	<u>Description</u>	<u>Qty</u>
D-188380-B	Electrical Connector	1
D-199660-C	Support Sleeve	1
D-199660-D	Retainer	1
D-199660-B	Collar	1
D-199660-E	Ring	1
D-188464-D	Gasket	8
D-188464-N	Gasket	2
D-188475-B	Retaining Washer	4
D-189723-A	Bail	1
D-189723-B	Pin	2

NOTE: Detail (1) D-187871-C, (4) -D, (4) -E and (1) D199264-B will be furnished by Du Pont.

6. ITEM 6 - EN S350-185-15-20 - Melt Level Dip Tube

One (1) Melt Level Dip Tube Assembly (Nozzle C2) per Drawing W-745987, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty</u>
D-188385-A	Level Dip Tube, Sh 1	1
D-188386	Level Dip Tube, Sh 2	-
D-188468	Nut Block	-
D-199660-C	Support Sleeve	1
D-199660-D	Retainer	1
D-199660-E	Ring	1
D-188382-A	Process Connector	1

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<u>Drawing No</u>	<u>Description</u>	<u>Qty</u>
D-188464-L	Gasket	1
D-189723-A	Bail	1
D-189723-B	Pin	2
D-816121-A	Isolator Ring	1
D-816121-B	Isolator Ring	1
D-816121-E	Isolator	5

NOTE: Detail (1) D-187871-C will be furnished by Du Pont.

7. ITEM 7 - EN S350-185-15-30 - TV Camera Support Frame Assemblies

Two (2) TV Camera Support Frame Assemblies, per W-748396, W-748395 and W-814474, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188384-A	Guide Bar	1	2
D-188384-B	Washer - Thrust	2	4
D-188384-D	Borescope Tube	1	2
D-188693 A	Bridge	1	2
D-198926	Bridge Weldment	-	-
D-188693-B	Cover	1	2
D-188695-A	Connector - Electrical	1	2
D-188696 A	Manifold - Air	1	2
D-188697 A	Lower - Counterweight	1	2
D-188697 B	Lower - Counterweight	1	2

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<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188698-A	Plate Guide	1	2
D-188698-B	Plate Guide	1	2
D-188698-C	Cover	1	2
D-188698-D	Cover	1	2
D-815265-A	Bail	1	2
D-815265-B	Pin	2	4
D-188700-A	Plate - Mounting	1	2
D-188700-C	Lower Brace	1	2
D-188700-D	Plate - Side Mounting	2	4
D-188700-E	Washer - Shim	2	4
D-188700-F	Brace Plate	1	2
D-188700-G	Brace Plate	1	2
D-815449-A	Seal	2	4

8. ITEM 8 - Feed Tube Assemblies

EN S350-185-13-2 - Shipping/Storage Fixtures
 See Paragraph 8.F. for details.

EN S350-185-13 - Feed Tube/Support Frame Assemblies

Two (2) Feed Tube/Support Frame Assemblies per W-800569,
 including Bill of Material items, sub-assemblies listed
 below and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188687-B	Cover	1	2
D-188687-C	Cover	1	2
D-816121-A	Isolator Ring	1	2

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<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-816121-B	Isolator Ring	1	2
D-816121-C	Isolator Ring	1	2
D-816121-D	Isolator Ring	1	2
D-816121-E	Isolator	10	20
D-822023-A	Hose Separator	1	2

a. Feed Tube (Sub-assembly)

Two (2) Feed Tube Assemblies per W-747380 and W-820958, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188399-A	Feed Tube, Sh 1	1	2
D-188400	Feed Tube, Sh 5	-	-
D-188452	Feed Tube, Sh 2	-	-
D-188453	Feed Tube, Sh 4	-	-
D-188454	Feed Tube, Sh 3	-	-
D-198789	Feed Tube, Sh 6	-	-
D-811183	Feed Tube, Sh 7	-	-
D-188708-A	Latch Plate	2	4
D-188708-B	Cam	2	4
D-188708-C	Pin	2	4
D-189701-A	Bail	1	2
D-189701-B	Pin	2	4

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<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-198204-C	Support Sleeve	1	2
D-198204-D	Retainer	1	2
D-198204-E	Ring	1	2
D-818789 A	Actuator Angle	1	2
D-818789-B	Actuator Angle	1	2

NOTE: Du Pont will furnish the following items:

<u>Drawing No</u>	<u>Description</u>
W-820958, B/M Item 7	Fiberfrax Blanket
D-188399 (Note 7 only)	Fiberfrax Blanket and Milled Fiberfrax
D-187871-Z	Isolator (2) total

b. Support Frame (Sub-Assembly)

Two (2) Support Frame Assemblies per W-747898, and W-747900, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188682-A	Frame - Right Side	1	2
D-188683-A	Frame - Left Side	1	2
D-188684-A	Frame - Rear, Sh 1	1	2
D-188685	Frame - Rear, Sh 2	-	-
D-188686	Frame - Rear, Sh 3	-	-
D-188687 A	Frame - Front, Sh 1	1	2
D-198935	Frame - Front, Sh 2	-	-

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<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188678-A	Latch	2	4
D-188678-B	Pin	2	4
D-188678-C	Latch Housing	2	4
D-188680-A	Brace	2	4
D-816394-A	Water Connection	1	2
D-822023-B	Rod	1	2
D-822023-C	Cover	1	2

c. Signal Flag (Sub-Assembly)

Two (2) Signal Flag Assemblies per W-801544, W-801815, and W-817436 including Bill of Materials items, and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-189717-A	Mounting Block	1	2
D-189717-B	Mounting Block	1	2
D-189717-C	Counterweight	1	2
D-189717-D	Flag	1	2
D-189717-E	Tripper	1	2
D-189717-F	Cam	1	2
D-189717-G	Pin - Mounting Block	1	2
D-818783-F	Tripper Base Plate	1	2
D-818783-G	Flag Tripper Plate	1	2
D-818783-H	Shim	1	2

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The chart displays the following resolution values:

- 1.0
- 1.1
- 1.25
- 1.4
- 1.6
- 1.8
- 2.0
- 2.2
- 2.5
- 2.8
- 3.2
- 3.6
- 4.0
- 4.5
- 5.0
- 5.6
- 6.3
- 7.1
- 8.0
- 9.0
- 10
- 11.2
- 12.5
- 14
- 16
- 18
- 20
- 22.4
- 25
- 28
- 31.5
- 36
- 40
- 45
- 50
- 56
- 63
- 71
- 80
- 90
- 100

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d. Latch Actuator (Sub-Assembly)

Two (2) Latch Actuator Assemblies per W-817421-A, including Bill of Material items and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-818783-A	Guide Bracket	1	2
D-818783-B	Latch Tripper Block	1	2
D-818783-E	Rod	1	2

e. Latch Actuator (Sub-Assembly)

Two (2) Latch Actuator Assemblies per W-817421-B, including Bill of Material items and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-818783-C	Latch Tripper Block	1	2
D-818783-D	Guide Bracket	1	2
D-818783-E	Rod	1	2

f. Shipping/Storage Fixture (EN S350-185-13-2)

Two (2) Shipping/Storage Fixture Assemblies per W-826813 including Bill of Material items and the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-827132-A	Upper Frame, Sh. #1	1	2
D-827136	Upper Frame, Sh. #2	-	-
D-827133-A	Support Bracket	2	4
D-827133-B	Right Bracket	1	2
D-827133-C	Support Bracket	1	2
D-827134-A	Base	1	2
D-827135-A	Center Post	1	2
D-827135-B	Bushing	1	2

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<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-827135-C	Guard	4	8
D-827135-D	Guard	2	4
D-827137-A	Left Bracket	1	2
D-827137-B	Brace	1	2
D-827137-C	Hold Down Bar	2	4

9. ITEM 9 - Riser/Pour Spout Heater

EN S350-185-18-10 - Shipping/Storage Fixture

See Paragraph 9.e. For details.

EN S350-185-18 - Riser/Pour Spout Heater Assembly & Installation Components.

One (1) Riser/Pour Spout Heater Assembly and auxiliaries, consisting of the following subassemblies. As noted, Du Pont will furnish all ceramic (Alumina) isolators, Zircar insulating sleeves, and Fiberfrax gaskets.

a. Heater Assembly

One (1) Heater Assembly per W-748709, including the following details:

<u>Drawing No</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-188383-A	Washer	1	1
D-188383-B	Nut	1	1
D-188705-A	Heater Core, Sh 1	1	1
D-188706	Heater Core, Sh 2	-	-
D-198796	Heater Core, Sh 3	-	-
D-188774 A	Pour Spout Strip Heater	1	1
D-188775-A	Riser Strip Heater	1	1
D-188786-A	Riser Heater Shell	1	1
D-188786-B	Pour Spout Heater Shell	1	1

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NOTE: Du Pont will furnish the following items:

<u>Drawing No</u>	<u>Description</u>
(1) D-188379-C	Alumina Isolators
(1) D-188787-A, (1) B (1) C	Zircar Sleeves
(1) D-188788-A (7)--B (2) C	Alumina Isolators
(4) D-188788-E (72)--F	
(14)--G	
(2)--H	
(6)--J	
(1) D-188789-A (3)--B	Alumina Isolators
(1)--C	
(2)--E	
(1)--F	
(1) D-188789-H	
(1) D-188790-A (6)--B	Alumina Isolators
(1)--C	
(1)--D	
(1)--E	
(1)--F	
(1) D-188465-C and (1) D	Fiberfrax Gaskets
(1) D-819588-B (1) D & (1)G	Zircar Isolators

b. Riser/Pour Spout Heater Installation Components

One (1) set of installation components per W-748706, W-748707, and W-748708, including Bill of Material items, and the following details:

Vendor is to assemble all components including isolators, insulation and T/C wires to check proper fit-up of all parts, then dis-assemble for shipment except T/C wires. Vendor is to provide any necessary external support items to simulate field installation.

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<u>Drawing No</u>	<u>Description</u>	<u>Total Qty</u>
D-187164-A	Gasket	1
D-187164-B	Gasket	3
D-187164-C	Gasket	2
D-187164-E	Gasket	4
D-188383-D	Isolator Holder	1
D-188383-E	Retainer	1
D-188464-D	Gasket	20
D-188464-E	Gasket	1
D-188475-B	Retaining Washer	10
D-188785-A	Cover	1
D-188800-A	Adapter	1
D-188800-C	Flange	4
D-188800-D	Shield	1
D-808600-A	Flanged Packing Gland	2
D-808600-B	Flanged Packing Gland	3
D-808600-C	Packing Follower	2
D-808600-D	Packing Follower	3
D-815444-A	T/C Support Bracket	1

NOTE: Du Pont will furnish the following items.

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<u>Drawing No</u>	<u>Description</u>
(10) D-187871-D, (3) E, (2) F, (10) G, & (1) AA	Alumina Isolators
(1) D-188379-B and (1) D	Alumina Isolators
(2) D-188465-A	Fiberfrax Gasket
(1) D-188792-A	Collar (Fiberfrax)
(1) D-188787-E and (1) F	Zircar® Sleeves
	Γ/C's & Related Hardware
(1) D-819502-A, (1) B & (1) C	Zircar® Isolators
(1) D-819588-A, (1) C, (2) E & (2) F	Zircar® Isolators
(1) D-819589-A (1)-B, (1)-C, (1)-D	Zircar® Isolators

c. Shipping Bracket Assembly

One (1) Shipping Bracket Assembly per W-748710,
 including Bill of Material items, and the following
 details:

<u>Drawing No</u>	<u>Total Description</u>	<u>Qty</u>
D-188791-A	Support Tube	1
D-188791-B	Clamp	2
D-188791-C	Clamp	2
D-808599 A	Adapter Plate	1

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d. Dummy Heater Assembly (S999-350-018-01)

One (1) Dummy Heater Assembly per W-748249, including Bill of Material items, and the following details:

<u>Drawing No</u>	<u>Rev</u>	<u>Description</u>	<u>Qty</u>
D-187645 A	0	Dummy Riser	1
D-187874-A	0	Cover	1
D-187874-B	0	Dummy Pour Spout	1

e. Shipping/Storage Fixture (EN S350-185-18-10)

One (1) Shipping/Storage Fixture Assembly per vendor drawing. (Similar to fixture provided for the scale melter riser/pour spout heater.)

D. Fabricated Equipment - Spare Melter

The following is a duplicate set of Items 1 through 3:

1. ITEM 10 - EN S999-350-14 - One (1) Set of Electrodes

Two (2) lower assemblies per W-743909-A, two (2) upper assemblies per W-743909-B, and installation components per W-743909 and W-804887 as described in Paragraph 10.C.1.

2. ITEM 11 - EN S999-350-16 - Four (4) Dome Heater Assemblies

One (1) assembly per W-812971, and installation components per W-812971 as described in Paragraph 10.C.2.

3. ITEM 12 - EN S999-350-15 - Melt Thermowell Assembly

One (1) assembly per W-746741 as described in Paragraph 10.C.3.

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4. ITEM 13 - EN S999-350-15-5 - Melt Thermowell Assembly

One (1) assembly per W-746743 as described in Paragraph IV.C.4.

5. ITEM 14 - EN S999-350-15-10 - Vapor Thermowell Assembly

One (1) assembly per W-746742 as described in Paragraph IV.C.5.

6. ITEM 15 - EN S999-350-15-20 - Melt Level Dip Tube Assembly

One (1) assembly per W-745987 as described in Paragraph IV.C.6.

ITEM 15A - EN S999-350-15-21 - Melt Level Dip Tube Assembly

Provide one (1) Melt Level Dip Tube Assembly (Nozzle C₂) per Drawing W-839573, Rev. 2, including Bill of Material items, and the following details:

<u>Drawing No.</u>	<u>Description</u>	<u>Qty/ Assy</u>
D-198445-A	Level Dip Tube, Sh. 1	1
D-198447	Level Dip Tube, Sh. 2	-
D-198451	Level Dip Tube, Sh. 3	-
D-198446	Level Dip Tube, Sh. 4	-
D-188468	Nut Block	-
D-189723-D	Pin	2

The following existing details are to be removed from Level Dip Tube Assemblies EN S999-350-15-20 & EN S999-350-50-20 (Ref. W-745987) and used on the New Level Dip Tube Assemblies, Items 15A & 22A (Ref. W-839573).

<u>Drawing No.</u>	<u>Description</u>	<u>Qty/ Assy</u>	<u>Total Qty</u>
D-199660-C	Support Sleeve	1	2
D-199660-D	Retainer	1	2
D-199660-E	Ring	1	2
D-189723 A	Bail	1	2

N = New C = Change
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<u>Drawing No.</u>	<u>Description</u>	<u>Qty/</u> <u>Assy</u>	<u>Total</u> <u>Qty</u>
D-816121-A	Isolator Ring	1	2
D-816121-B	Isolator Ring	1	2
D-816121-E	Isolator	5	10
D-187871-C	Isolator (Sleeve)	1	2

7. ITEM 16 - EN S999-350-15-30 - TV Camera Support Frame Assembly

Two (2) assemblies per W-748395, W-748396, and W-814474 as described in Paragraph IV.C.7.

8. ITEM 17 - EN S999-350-13 - Feed Tube/Support Frame Assemblies & EN 999-350-13-2 - Shipping/Storage Fixtures

Two (2) assemblies per W-800559 as described in Paragraph IV.C.8.a thru e and two (2) fixtures per W-826813 as described in IV.C.8.f.

9. ITEM 18 - EN S999-350-18 - Riser/Pour Spout Heater Assembly & EN S999-350-18-10 - Shipping/Storage Fixture

One (1) assembly and auxiliaries per W-748706 and W-748709 as described in Paragraph IV.C.9.a. thru d. and one (1) fixture as described in IV.C.9.e.

E. Fabricated Equipment - Operating Spares

The following is a duplicate set of Items 3 through 8:

1. ITEM 19 - EN S999-350-50 - Melt Thermowell Assembly

One (1) assembly per W-746741 as described in Paragraph IV.C.3.

2. ITEM 20 - EN S999-350-50-5 - Melt Thermowell Assembly

One (1) assembly per W-746743 as described in Paragraph IV.C.4.

3. ITEM 21 - EN S999-350-50-10 - Vapor Thermowell Assembly

One (1) assembly per W-746742 as described in Paragraph IV.C.5.

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4. ITEM 22 - EN S999-350-50-20 - Melt Level Dip Tube Assembly

One (1) assembly per W-745987 as described in Paragraph IV.C.6.

(N)

ITEM 22A - Melt Level Dip Tube Assembly

One (1) assembly per W-839573 as described in Paragraph IV.D.6, Item 15A.

5. ITEM 23 - EN S999-350-50-30 - TV Camera Support Frame Assembly

Two (2) assemblies per W-748395, W-748396, and W814474 as described in Paragraph IV.C.7.

6. ITEM 24 - EN S999-350-50-40 - Feed Tube/Support Frame Assemblies & EN S999-350-50-42 - Shipping/Storage Fixtures

Two (2) assemblies per W-800559 as described in Paragraph IV.C.8.a. thru e. and two (2) fixtures per W-826813 as described in IV.C.8.f.

7. Item 25 - EN S999-350-50-31 - TV Boroscope Tube

One (1) borescope tube per 188384-D (To be used as a gauge for borescopes).

F. Fabricated Equipment - Miscellaneous Parts

EN S350-185-10-12 - Shell Parts - Canyon Melter
 EN S999-350-10-12 - Shell Parts - Spare Melter

1. Provide the following parts per W-804860 including Bill of Material items:

<u>Dwg. No.</u>	<u>Description</u>	<u>Canyon Spare</u>		<u>Total</u>	
		<u>Melter</u>	<u>Melter</u>		
		<u>Qty</u>	<u>Qty</u>	<u>Qty</u>	
D-187164-D	Gasket	4	4	8	] Used on] Melter Shell
D-188464-F	Gasket	8	8	16	
D-188474-C	Inlet Pipe	8	4	16	Used on Shell Pads For Electrodes, Item 1

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D-188475-A	Retaining Washer	4	4	8]	] Used on] Melter Shell
D-188800-B	Retaining Plate	2	2	4]	
D-198209-A	Jumper Box	2	2	4	Used on Shell Flg.
D-198216-B	Gasket	2	2	4	For Dome Htr's, Ite. 2

Note: Detail (4) D-187871-H, (8) K, (8) L & (4) U will be furnished by Du Pont (total quantities).

2. EN S999-350-50-43 Inspection & Assy Fixture

Two (2) Inspection and Assembly Fixtures per W-826534 including B/M Items 1 thru 17 and W-831497 including Bill of Material Items 1 thru 5 and the following details:

Note: This fixture is required for inspection and final assembly of all top head components, Items 3, 4, 5, 6, 7, and 8. (Ref. W-826534)

<u>Dwg. No.</u>	<u>Description</u>	<u>Qty</u> <u>Assy</u>	<u>Total</u> <u>Qty</u>
● D-822992-A	TV Positioning Plate	1	2
● D-822992-B	Bushing	1	2
● D-822992-C	Bushing	1	2
● D-822992-D	Bushing	1	2
D-822993-A	Base Plate	1	2
D-822994-A	Gaging Plate	2	4
D-822994-B	Hinge Plate	2	4
● D-822996-A	Gaging Bar	1	2
● D-822998-A	Gage Standard	1	2
● D-822998-B	Gage Standard	1	2
● D-822998-C	Gage Block	1	2
● D-822998-D	Gage Block	1	2
● D-822998-E	Sleeve	1	2
D-824847-A	Bracket	2	4
D-824847-B	Clevis	2	4
D-824847-C	Clevis	2	4
D-824847-D	Support Bar	2	4

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<u>Dwg. No.</u>	<u>Description</u>	<u>Qty</u> <u>Assy</u>	<u>Total</u> <u>Qty</u>
D-824847-E	Spacer	4	8
D-830774 A	Frame	1	2
D-832202-A	Brace	1	2
D-832202-B	Brace	1	2
D-832202-C	Brace	1	2
D-832202-D	Brace	1	2

- These parts shipped loose (Ref. W-831497).

3. EN S992-350-50-44 Seal Test Assembly

Provide one (1) seal test assembly per W-837562 including B/M Items and the following details.

<u>Dwg. No.</u>	<u>Description</u>	<u>Qty</u> <u>Assy</u>
837602-A	Adapter	1
837603 A	Bottom Enclosure	1
837603-B	Gasket	6 (includes extras)

Also, provide replacement seals and test seals for top head components as follows:

<u>Fluorocarbon</u> <u>No.</u>	<u>Description</u>	<u>Total</u> <u>Qty</u>
C-230584	C-Ring	20 (includes 2 spares for test)
C-230585	C-Ring (for TV only)	6
U-260217	Clip	78

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U. MATERIAL

A. Du Pont Furnished Material

1. Inconel 690 Material

Du Pont shall furnish the following I690 stock.
 Quantities shown are as ordered from the supplier. In some cases, primarily bar stock, actual amount shipped may exceed these values up to 15%.

Those items that are for the exclusive use of other vendors are marked with an asterisk(*) .

a. Cold Rolled Sheet

<u>Item</u>	<u>Description</u>	<u>Size in Inches</u>	<u>Qty</u>
*1	Sheet for 8" pipe	.148 x 28.00 x 120.00	10

b. Hot Rolled Plate

<u>Item</u>	<u>Description</u>	<u>Size in Inches</u>	<u>Qty</u>
2	--	.250 x 54.00 x 100.00	1
3	--	.375 x 54.00 x 100.00	1
*4	Plate for 12" pipe	.406 x 41.00 x 100.00	6
5	--	.500 x 54.00 x 100.00	1
6	--	.750 x 54.00 x 100.00	1
7	--	1.00 x 54.00 x 100.00	1
*8	--	1.50 x 60.00 x 120.00	2
*9	--	3.00 x 3.00 x 6.00	4
* 10	Film Cooler Flange	3.00 x 16.00 x 25.50	10
* 11	A&T Nozzle Flange	3.00 x 17.50 x 26.50	10
12	Lower Electrode	4.50 x 12.50 x 40.50	6

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<u>Item</u>	<u>Description</u>	<u>Size in Inches</u>	<u>Qty</u>
13	Upper Electrode	4.50 x 15.50 x 40.50	6
* 14		5.00 x 6.25 x 6.50	40
15	Lid Heater Jumper	5.25 x 6.50 x 13.50	10

c. Bar Stock

<u>Item</u>	<u>Diameter In Inches</u>	<u>Total Length In Inches</u>
16	1.25	500
17	1.75	400
18	2.75	400
19	3.50	3000
20	3.75	5000
21	4.50	2000
22	5.50	1200
23	7.00	500
24	8.00	600
25	9.50	700
26	12.00	600

d. Cold Drawn Pipe

<u>Item</u>	<u>Pipe Size</u>	<u>Length in Inches</u>
27	3.00 Schedule 40	600
* 28	0.50 Schedule 40	120

NOTE: 204" of Item 27 is dedicated for use by another vendor.

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e. Type 690 Weld Wire

<u>Item</u>	<u>Diam. In Inches</u>	<u>Amount (lbs)</u>	<u>Configuration</u>
29	.062	189	Continuous lengths on 12" welding spools, 25 lb/spool
30	.093	1326	36" lengths
31	.125	1245	36" lengths

- f. All bar stock material supplied is in SOLID form, except pipe Items 27 & 28. Since many of the items require hollow forms, the following source for deep drilling and trepanning is recommended:

American Hollow Boring Company
 1900 Raspberry Street
 Erie, PA 16502
 (814) 452-3664

- g. The total supply of material, Items 1 thru 31, is the amount required by the entire DWPF project. Those items marked with an asterisk are dedicated to additional equipment that will be fabricated by other suppliers. The vendor for this order will distribute Inconel 690 plate, bar stock, and weld wire to these other fabricators. Disbursements will be controlled by written instructions from J. D. Gutmann, Jr., E. I. du Pont de Nemours & Co., Engineering Department.

2. Alumina Isolators

These are high density ceramic parts for electrical isolation.

<u>Drawing No</u>	<u>For Use With</u>
D-187871-A & B	Installation Components
D-188463-A, B & C	W-743909 & W-804887, Electrode
D-187871-D & Y	Installation Components
D-198210-A Thru F	W 812971, Dome Heater

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<u>Drawing No</u>	<u>For Use With</u>
D-188379-C	Heater Assy, W-748709
D-188788 A thru C & E thru J	Heater Assy, W-748709
D-188789-A & F & H	Heater Assy, W-748709
D-188790-A thru F	Heater Assy, W-748709
D-187871-D thru G, & AA	Installation Components, W-748706, W-748707, and W-748708. Riser/Pour Spout Heater
D-188379-B and D	
D-187871-Z	Feed Tube Assembly, W-747380

3. Fiberfrax Blanket

This is a low density ceramic fiber blanket material for cushioning at high temperatures.

<u>Drawing No</u>	<u>For Use With</u>
W-820958, B/M Item 7	Feed Tube Assy, W-820958
D-188399, (Note 7C)	Feed Tube Assy, W-747380

4. Milled Fiberfrax

This material consists of milled ceramic fibers which can be poured and vibrated in place. It is used for insulation at high temperatures.

<u>Drawing No</u>	<u>For Use With</u>
D-188399 (Note 7b)	Feed Tube Assy, W-747380

5. Fiberfrax Paper

This is a ceramic fiber paper material in thin sheets which can be hand or die cut for gaskets, etc.

<u>Drawing No</u>	<u>For Use With</u>
D-188465-C and D	Heater Assy, W-748709
D-188465-A	Installation Components, W-748707
D-188465-B	Electrode Assy, W-743909

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6. Zicar Insulators

This is a low density ceramic fiber material for insulation at high temperatures. This material will be supplied in its final finished form.

<u>Drawing No</u>	<u>For Use With</u>
D-188787-A, B, C	Heater Assy, W-748709
D-819588-B, D, G	Heater Assy, W-748709
D-188787-E and F	Installation Components,
D-819502-A, B, C	W-748706, Heater Assembly
D-819588-A, C, E, F	
D-819589-A, B, C, D	

B. Vendor Furnished Material

1. The vendor shall furnish all material except for those items listed in preceeding Paragraph U.A.

2. Certification

Certification is required for each lot and heat of 304L stainless steel and shall include both chemical analysis and mechanical properties.

3. Corrosion Evaluation

Corrosion evaluation of materials is not required.

4. Welding Rod

All 304L welds shall be made with low carbon welding rod. The vendor shall provide a system to ensure that only low carbon rod is used on 304L material.

5. Identification

Mill ASME or ASTM ink markings shall remain to the extent possible on the fabricated items. Identification shall meet the contamination prevention requirements, Paragraphs U.D.3 and 4.

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C. Material Control

The vendor shall establish a system to control 304L stainless steel, Inconel 690, and the respective welding rods. This control shall include:

1. Segregation of this material from material for other jobs.
2. Written procedures for material withdrawal and use.
3. Inventory control for disbursement of Inconel 690 material and weld wire to other fabricators.

D. Contamination Prevention

1. Appropriate fabrication techniques shall be used to prevent contamination of 304L sst and Inconel 690 with carbon steel.
2. No galvanized steel parts, marking ink, or other substances containing zinc or other low melting materials shall be permitted to contact the stainless steel at any time during storage or fabrication.

However, use of a carbon steel mandrel for fabrication of riser heater elements will be acceptable.

3. Inks, labels, or other means of marking fabrication progress shall have a low chloride content (250 ppm maximum). Markings and labels shall be removed and the stainless steel surfaces thoroughly cleaned with alcohol, acetone, or other Du Pont approved solvents prior to assembly.
4. Acceptable marking materials are identified in Du Pont Specification SP3D, Table 1, Page 2.

VI. FABRICATION

A. Fabrication Quality

1. It is imperative that the auxiliary components of the DWPF melter covered in this specification be fabricated with the highest regard for cleanliness, material quality, workmanship, accuracy, and control. This is dictated by the remote handling requirements described in Paragraph IV.B.

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2. In all instances, no deviation from the requirements specified on the drawings will be permitted without prior consideration and agreement in writing by Du Pont Engineering.
3. In general, the components specified herein should be treated as instrument quality components.

B. Welding

1. Procedures

a. General

- 1) Surfaces to be welded must be made free of oxide by machining, grinding, or pickling.
- 2) Cleanliness is essential. The weld areas and adjacent areas and weld wire must be freed of all contaminants (marking materials, shop dirt, oil, abrasive materials, etc) by grinding and solvent cleaning with clean wiper and solvent.
- 3) Weld only with the GTAW process using Du Pont supplied filler metal.
- 4) Where the inside or backside of the joint is accessible, the root must be back excavated to sound material as indicated by dye penetrant inspection.
- 5) Where the inside or backside of the joint is not accessible, the root must be protected by inert gas backup.
- 6) The oxide on each bead must be removed (preferably by a flapper wheel) before depositing next bead.

b. Vendor Procedures

The vendor shall submit written procedures for welding 304L stainless steel, welding Inconel 690 to 304L stainless steel, and welding Hastelloy C276 to Inconel 690. These procedures will be reviewed and approved by Du Pont prior to fabrication.

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c. Liquid Penetrant Examination

- 1) Liquid penetrant examination shall be in accordance with ASME Section VIII, Division 1, Mandatory Appendix VIII.
- 2) Testing solutions shall have low contents of mercury, sulfur, halogens, and other low melting materials. All traces of solutions shall be removed and the surfaces solvent cleaned and dried, prior to deposition of additional weld metal, and after final testing.
- 3) All welds shall be subjected to liquid penetrant examination as follows:
 - a) Root pass and cover pass of fillet welds and full penetration welds deposited from one side only. In cases where thick joints are involved, the root liquid penetrant examination may be deferred until the second or third pass.
 - b) Back chip and cover passes of all butt welds deposited from both sides, and other full penetration welds deposited from both sides.
 - c) Areas where temporary attachments were welded to parent metal.
- 4) Vendor personnel performing and interpreting liquid penetrant examinations shall be qualified as outlined in Section VIII, Division 1, ASME Code.

d. Radiographic Examinations

- 1) Welds requiring radiograph examination are noted in the drawings.
- 2) Radiographs shall be made using fine grain film and lead screens and shall be in accordance with UW-51, Section VIII, Division 1, ASME Code.
- 3) The vendor shall maintain radiographic records, including layout sketch and reader sheets.

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- 4) Vendor personnel performing radiography and interpreting the results shall be certified as described in the recommended practice SNT-TC-1A of The American Society of Nondestructive Testing. The certified interpreter shall sign and date each radiographic reader sheet.

e. Ultrasonic Examination (UT)

- 1) Weld overlays that require UT Examination are noted on Drawing 187602. Overlays are to be premachined prior to UT Examination.
- 2) Ultrasonic Examination (straight beam) shall be in accordance with Article 5, Section VI, of the ASME Code.
- 3) Reporting shall be per Article 5, Section VI, of the ASME Code which states that all indications which produce a response of greater than 20 percent of the reference level shall be investigated to the extent that the operator can evaluate the shape, identity, and location of all such reflectors.

F. Test Specimens

Prior to welding on this order, the vendor shall prepare the test specimens and perform the following tests per ASME Code, Section IX, Part QW-462. The specimens shall be made out of Du Pont-supplied Inconel 690 material.

<u>Required No of Specimen</u>	<u>Test</u>	<u>Per ASME Code Section IX</u>
2	Tension-Reduced Section-Plate Parallel to Rolling Direction	Part QW-462.1(a)
2	Tension-Reduced Section-Transverse Weld	Part QW-462.1(a)

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<u>Required No of Specimen</u>	<u>Test</u>	<u>Per ASME Code Section IX</u>
4	Side Bent Test Specimen-Transverse Weld	Part QW-462.2(a)
4 (2 ea)	Face and Root Bends- Transverse-Weld	Part QW 462.3(a)

After Du Pont has approved the results of the above tests, the vendor can proceed to weld parts on this order.

VII. TESTING

A. Leak and Hydrostatic Tests

- The vendor shall perform leak and hydrostatic tests, per Paragraphs VII.A.2 and VII.A.3, on the following flow passages:

<u>Item No</u>	<u>Total Qty</u>	<u>Description</u>	<u>Ref Dwg</u>
1 and 10	8	Electrode	D-187373
8, 17, and 24	6	Feed Tube	D-188399

- Halide leak tests shall be performed per Du Pont Standard SG4T at 15 psig.
- Hydrostatic tests shall be run using demineralized water (less than 5 ppm chlorides). An analysis of the test water is required. Tests of the electrode water passages shall be run at 90 psig. Tests of the feed tube passages shall be run at 225 psi per Notes on Drawing D-188399.

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B. Mechanical Tests

At final inspection, the moving parts shall be manually actuated to demonstrate free movement without binding. This requires a plumb set-up with a (1) ton hoist having a minimum of 22 feet from floor to hook. This applies to the following:

<u>Moving Part</u>	<u>Drawing</u>
Lifting Bails on all Top Head Assemblies	VARIOUS
Signal Flag on Feed Tube Assemblies	W-801544
Feed Tube vs Support Frame Assembly including Latch & and Trip Mechanism. (Verify proper tracking of hoses.)	W 800559
Counterweighted Hose System on TV Camera Support Frame Assembly	W-748395 W-748396

VIII. NAMEPLATES

The vendor shall attach to each assembly (item) an embossed or engraved plastic or stainless steel tag bearing the Du Pont order number and engineering number as indicated.

IX. PREPARATIONS FOR SHIPMENT

Provide packaging to prevent damage from contaminants, and during handling and transit. This shall include:

- A. Sturdy wood crates.
- B. Provisions for handling with a forklift truck.
- C. Additional protection for machined surfaces. Flanged openings shall be sealed with low chloride pressure sensitive tape extending over the flange faces, and covered with 1/2" exterior grade plywood.

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- D. Feed tube to be shipped assembled complete with frame and shipping/storage fixture.

X. SURVEILLANCE SPECIFICATION

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling as least 48 hours before each surveillance inspection is required by telephoning (302) 451-0200.
2. When major components or services are obtained from subvendors, the QAFR may check these items at the point of manufacture. It is the vendor's responsibility to include Du Pont surveillance and notification requirements in suborders.

B. Vendor QA Manual/Procedure Requirements

1. The supplier shall submit, with his quotation, a detailed procedure for the control and dispersal of Du Pont-furnished Inconel 690 material and welding consumables. The procedure shall be reviewed for approval after the award of the order. As a minimum, the procedure shall address receiving inspection of incoming material from the mill and from other suppliers, segregation of Du Pont material from the supplier's own material, maintenance of material identification on material cut to size, authorization from Du Pont Project Engineering Division for shipment of material to other suppliers, issuance of material to the shop for fabrication, packaging of material for shipment, maintenance of documentation, periodic reporting of the inventory of the material on hand, and a listing of the dispersals made of material received.
2. The supplier shall have, in place and functioning, a material control procedure which addresses supplier-furnished material, including welding consumables.

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3. The supplier shall have, in place and functioning, procedures which address the control of special processes. Special processes are defined as welding, heat treatment (if applicable) and nondestructive examination (radiography and liquid penetrant examination). The procedures shall address materials to be used, techniques, and qualification of personnel.
4. The supplier shall have, in place and functioning, a procedure which addresses the control and calibration of measuring and test equipment. Calibration shall be traceable to nationally recognized standards.
5. The supplier may choose to use his own nonconformance reporting procedure or refer nonconformances to the QA/R or technical contact for resolution.
6. A Quality Control Program which satisfies the ASME Code, Section VIII, Division 1, Appendix 10, will satisfy the intent of Paragraphs 2, 3, 4, and 5 above.

C. Special Considerations

1. The supplier of this order is being asked to do two distinctly different things; first, to fabricate/test glass melter components and second, to provide warehousing/material distribution services for the Inconel 690 material being used on the project.
2. Inconel 690 material is being shipped to the supplier from International Nickel Corporation, Huntington, West Virginia.
3. The Inconel 690 material is scheduled to be inspected by QA/R Clarke prior to shipment.

D. Prefabrication Surveillance Meeting

The first visit will be initiated by S. B. Hicks, QA Engineer, (302) 366-2116. The surveillance and specification requirements will be reviewed with vendor's manufacturing and quality control personnel. A tentative schedule of future surveillance visits will be established.

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E. Surveillance Schedule

Vendor to request inspection at the following points:

1. Prefabrication meeting.
2. Continuous monitoring of the Inconel 600 Material Control System.
3. Preliminary Surveillance - As fabrication is beginning.
4. Intermediate Surveillance - As nondestructive examination is being performed.
5. Final Surveillance - Prior to shipment of fabrications; joint inspection with Project Engineering Division

F. Inspection Instructions

The following will be performed by the QA/R:

1. Prefabrication Meeting
 - a. Discuss specification requirements, clarifying the difference between fabrication and material control.
 - b. Discuss, in detail, the supplier's proposed control system for Du Pont-furnished material.
 - c. Discuss fabrication sequencing and adjust the surveillance points as necessary.
 - d. Resolve any exceptions the supplier may have.
2. Continuous monitoring of the Inconel 690 material control.
 - a. Confirm the segregation and control of Du Pont material.
 - b. Confirm that material identification is being maintained.
 - c. Review shipments, destinations, and authorizations from Project Engineering Division to make shipments

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3. Preliminary Surveillance - as fabrication is beginning.
 - a. Review the supplier's welding procedures. Confirm they are written in accordance with the ASME Code, Section IX.
 - b. Review the welder's qualifications assuring they are in accordance with the ASME Code, Section IX.
 - c. Review and approve the weld test samples and test results.
 - d. Visually monitor any welding and/or machining in progress.
4. Intermediate Surveillance - as nondestructive examination is being performed.
 - a. Review destructive testing procedures assuring they are in accordance with the ASME Code, Section V.
 - b. Review nondestructive examiner's qualifications assuring they are in accordance with the ASME Code, Section VIII, Division 1.
 - c. Witness the liquid penetrant examination of the final pass of all specified welds. Review and initial the supplier's test certificate for each test witnessed assuring the certificate is in accordance with the procedure.
 - d. Review any and all radiographs, including radiographs of repairs, noting the source, source strength, film type, screens, identification and penetrameters. Initial the applicable radiographic reader sheets when you are satisfied with the radiographs.
 - e. Witness the Ultrasonic Examination (UT) of weld overlays noted on Drawing 187602. Review and initial the applicable test sheets when satisfied with the Ultrasonic Examinations assuring the UT is in accordance with the ASME Code.
 - f. Visually monitor parts for specified finishes.

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5. Final Surveillance - prior to shipment of fabrications - joint surveillance with Project Engineering Division.
 - a. Witness the halide leak and hydrostatic testing of applicable parts. Initial the supplier's hydrostatic test certificate.
 - b. Witness the supplier's inspection of the dimensions of the detailed parts, noting checks for perpendicularity, parallelism, flatness, and finish.
 - c. Review the supplier's preparations for shipment of the detailed parts. Confirm the destination on shipping documents.
 - d. Witness the performance of the mechanical tests as described in Paragraph VIIB.

XI. DOCUMENTATION

- A. The fabricator shall prepare a documentation inventory transmittal sheet (listing all documents and number of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list Du Pont purchase order number, equipment identification, and be consecutively numbered.
- C. The Du Pont QAFR shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.
- D. The fabricator shall forward documentation at time of shipment as follows:
 1. One complete set (including signed documentation inventory transmittal sheet) shall be sent by mail, immediately following acceptance by the QAFR, to:

E. I. du Pont de Nemours & Co., Inc.
Engineering Department
Louviere Building 3321
Newark, DE 19711
Attn: Mr. J. Scafaria

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2. One complete set (including signed documentation inventory transmittal sheet) to be included with shipment and marked as follows:

Attn: Receiving Supervisor - Construction
Savannah River Plant

3. Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co., Inc.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

Attn: Construction Material Expeditor
Building CAB/CS

4. One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co., Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108

Attn: S. B. Hicks

5. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.
6. The supplier shall submit the following documentation:
- a. Nondestructive test certificates
 - b. Mill Test Reports for material provided by the supplier
 - c. The summary list of inconel material dispersals
 - d. Analysis of hydrostatic test water

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (131 Augusta, GA 30913)
(TWA 810-771-2071) TEL 803-726-6211 WU AUGUSTA, GA

DATE		
MO	DAY	YR
2	10	88

ORDER NO
AXC 8901W

VC: 06923

TO

(716) 693-3840
Keller Technology
2320 Military Road
P. O. Box 103 (Buffalo 14217)
North Tonawanda, NY 14150FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE INVOICE

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-E

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUESTED TO FOLLOW THE REGULATIONS OF THE REGULATION AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS IN ORDER
OBTAINING PRODUCT, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
FOR THE BEST INTEREST FOR NATIONAL DEFENSE
USE UNDER THE REGULATION

E. I. du Pont de Nemours & Co. (Inc.)

A

B

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
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ADD THE FOLLOWING TO THIS ORDER:

2	S999-350-20-10	Assembly-Spare PourSpout Bellows, SightGlass Wind.	\$766.00 each
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Per Spec. 3-8901 Rev. 10 dated 02/01/88
attached and made part of this order.

TECHNICAL CONTACT: B. J. Etienne 302-366-2040

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price	\$446,772.00
Alt 10 Increase	\$ 1,532.00
New Total Firm Price	\$448,304.00

Per vendor quote #3509 dated 3/1/88 by F. Steinbruckner

SHEET ☐ FINAL ☐		PRIORITY RATING ACM EXECUTED BY	REQUISITION NUMBERS
MARK AND SHIP AS FOLLOWS:			9S1780 c1b
TO E. I. DU PONT DE NEMOURS & COMPANY			3-8901
ORDER NO.		EXECUTED BY R. L. Donnell	ORIGINATOR
DEST		ISSUING POINT XXXXXXXX Wilm, DE	BUYER B. J. Etienne
AXC-8901-W A10			1-0-
ITEM NO	GENERAL LEDGER & COST CODE		AMOUNT \$.
			DIRECT ALL INQUIRIES TO THE BUYER
			PURCHASE EXEMPT FROM SOUTH CAROLINA AND USE TAXES PURSUANT TO EXEMPT CERTIFICATE NO. 110 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.
			APPROVED FOR THE BUYER

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EN S350-185-20

1 - Pour Spout Bellows Assembly

EN S999-350-20

1 - Spare Pour Spout Bellows Assembly

EN S999-350-70-1

5 - Du Pont Canister Throat Protector Assemblies

(N) EN S999-350-20-10

2 - Spare Pour Spout Bellows Assembly Sight Glass Windows

I. GENERAL

A. Scope

This specification covers materials, dimensions, tolerances, welding and surveillance procedures for two pour spout bellows assemblies.

B. Function of Pour Spout Bellows Assembly

The pour spout bellows assembly will be used in a new Defense Waste Processing Facility (DWPF). This Facility will prepare radioactive waste material for long term storage by converting it into a stable borosilicate glass form. The waste glass will be prepared in a glass melter and slowly poured through the pour spout bellows assembly into steel canisters for long-term storage.

C. Fabrication Quality

The pour spout bellows assemblies must be manufactured to meet exacting quality standards. This requirement is dictated by the unique operating environment of the DWPF melter and pour spout bellows assembly.

Once started up, the pour spout bellows assembly must be operated by remote control for several years. Although the pour spout bellows assembly can be replaced remotely, it is imperative that the assembly satisfactorily operate for at least two years.

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D. Materials of Construction

Materials of construction for the pour spout bellows assembly parts are specified on the drawings. No material substitutions are to be made without Du Pont approval. Mill test reports for Fabricator supplied stainless steels, Inconel®, and any other material called for on drawings, including both chemical analysis and mechanical properties, shall be submitted to Du Pont per Section VII.F.

E. Shipping Schedule

Time is of the essence, and the fabricator's quote is to be based on providing the pour spout bellows assemblies by the required shipping date.

II. DRAWINGS AND QUANTITIES

A. The following equipment arrangements, assemblies and detail part drawings, including Bill of Material items and quantities as shown below and on Machine Drawing and Parts List (MD & PL) dated 11/15/85, Forwarded for quotation purposes are to be deleted from this specification:

<u>Qty per Assembly</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev.</u>
2	4	D-188701-A	3
2	4	D-188701-B	
2	4	D-188701-C	
3	6	D-188701-D	
3	6	D-188701-E	
-	-	D-188777	1
-	-	D-188778	1
-	-	D-198766	10
2	4	D-198906-A	1
2	4	D-198906-B	
1	2	D-198906-C	
2	4	D-198906-D	
1	2	D-198906-E	
1	2	D-198909-A	3
1	2	D-198909-B	
1	2	D-199283-A	4

N = New C = Change
 2499W/jel R10/clb

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<u>Qty per Assembly</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev.</u>
1	2	D-199284-A	9
1	2	D-199285-A	8
2	4	D-199286-A	1

8. The following equipment arrangements, assemblies and Machine Drawing and Parts List Number 2309, Pages 01 through 013, dated April 2, 1987, are to be used in assembling the pour spout bellows assemblies specified. The pour spout bellows fabricator is to provide all Bill of Material items included on these drawings and fabricate the detail parts shown below

<u>Qty per Ass'y</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev</u>	<u>Description</u>
1	2	<u>W-801823</u>	30	Pour Spout Bellows Assy, Sh 1
-	-	<u>W-803460</u>	36	Pour Spout Bellows Assy, Sh 2
-	-	<u>W-816042</u>	8	Pour Spout Bellows Assy, Sh 3
-	-	<u>W-816050</u>	1	Pour Spout Bellows Assy, Sh 4
1	2	D-187869-A	8	Counterweight Box
1	2	D-187869-B		Counterweight Box
1	2	D-188703-A	13	Upper Arm
2	4	D-188703-B		Pin
1	2	D-188703-C		Bail
1	2	D-198763-A	46	Bellows Frame, Sh 1
-	-	D-198764 (Ref)	25	Bellows Frame, Sh 2
-	-	D-198765 (Ref)	16	Bellows Frame, Sh 3
-	-	D-198767 (Ref)	51	Bellows Frame, Sh 5
-	-	D-198768 (Ref)	17	Bellows Frame, Sh 6
-	-	D-198769 (Ref)	50	Bellows Frame, Sh 7
1	2	D-199447	0	Shield
-	-	D-198770 (Ref)	17	Bellows Frame, Sh 8
-	-	D-199448 (Ref)	10	Bellows Frame, Sh 10
-	-	D-811172 (Ref)	10	Actuator Bellows, Sh 1

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<u>Qty per Ass'y</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev</u>	<u>Description</u>
2	4	D-815252-A	2	Clevis
2	4	D-815252-B		Clevis
2	4	D-815252-C		Clevis
2	4	D-815270-A	2	Guide
8	16	D-815270-B		Roller
2	4	D-815270-C		Shim
2	4	D-815270-D		Spacer
1	2	D-815271-A	0	Slide
2	4	D-815271-B		Guide
1	2	D-815271-C		Flange
1	2	D-815274-A	8	Actuator Bellows, 3H-1
1	2	D-815436-A	0	Lower Arm
3	6	D-815438-D	1	Washer
1	2	D-815440-A	1	Guide
1	2	D-815440-B		Guide
2	4	D-815448-A	1	Guide Block
2	4	D-815448-B		Cover Plate
1	2	D-815459-A	8	Counterweight Box
4	8	D-816113-A	0	Flange
1	2	D-816113-C		Pin
4	8	D-816113-E		Guide Bushing
4	8	D-816113-F		Spacer
1	2	D-816380-A	0	Bar
1	2	<u>W-804231</u>	12	Upper Arm Actuator Assy

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<u>Qty per Ass'y</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev</u>	<u>Description</u>
1	2	D-188466-A	4	Upper Plate
1	2	D-188466-B		Lower Plate
1	2	D-188702-A	11	Acme Screw
1	2	D-188702-B		Acme Screw
1	2	D-188704-A	9	Bushing
1	2	D-188704-B		Bushing
2	4	D-188704-C		Washer
4	8	D-188704-D		Guide
5	10	D-188704-E		Nut
-	-	D-199637 (Ref)	2	Acme Screw, Sh 2
2	4	D-816113-B	0	Guide Bushing
2	4	D-816113-D		Spacer
1	2	D-816129-A	0	Guide
1	2	<u>W-814500</u>	0	Upper Adapter Bellows Assy
1	2	D-815272-A	3	Upper Adapter Bellows
-	-	D-811173 (Ref)	6	Upper Adapter Bellows, Sh 2
1	2	D-815438-A	1	Spring Plate
1	2	D-815438-B		Guide
1	2	D-815438-C		Guide
1	2	<u>W-816001</u>	1	Actuator Bellows Shipping & Handling Assy
1	2	<u>W-816002</u>	0	Lower Adapter Bellows Assy
-	-	D-811171 (Ref)	5	Lower Adapter Bellows, Sh 2

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<u>Qty per</u> <u>Ass'y</u>	<u>Qty</u> <u>Total</u>	<u>Drawing</u>	<u>Rev</u>	<u>Description</u>
1	2	D-815273-A	0	Lower Adapter Bellows
1	2	D-815439-A	0	Spring Plate
1	2	D-815439-B		Guide
1	2	D-815439-C		Guide
1	2	<u>W-816014</u>	1	Lower Bellows Shipping & Handling Assy
1	2	<u>W-816015</u>	2	Upper Bellows Shipping & Handling Assy
1	2	W-817478	0	Switch Actuator Assy
1	2	D-816891-A	0	Pin
1	2	D-816891-B	0	Actuator
1	2	D-816891-F	0	Guard
-	-	D-823776 Ref.	0	Bellows Frame, Sht. 1
-	-	D-823777 Ref.	3	Bellows Frame, Sht. 2
-	-	D-823798 Ref.	2	Bellows Frame, Sht. 11

C. Additional Parts

The pour spout bellows fabricator is to provide two (2) additional Haskell "K" ring seals of each size specified on Du Pont Drawing W-803460 as Items 19 and 21, and four (4) additional seals identified as Item No. 1.

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D. Du Pont Canister Throat Protector Assemblies

Fabricate and assemble Du Pont canister Throat Protector Assemblies in accordance with the assembly drawing, including Bill of Material items, and detail parts shown below.

<u>Qty per Assembly</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev.</u>	<u>Description</u>
1	5	W-817415	0	Canister Throat Protector Assembly
1	5	W-816396-A	0	Throat Assembly
1	5	W-816396-B	0	Bail

Fabricator is to ship three (3) Du Pont Canister Throat Protector Assemblies with Pour Spout Bellows Assembly EN S350-185-20 and the other two (2) assemblies with Pour Spout Bellows Assembly EN S999-350-20. All charges related to fabrication and assembly of these Throat Protector Assemblies are to be itemized separately from that related to the Pour Spout Bellows Assemblies.

E. Fabricate and assemble Switch Support (base, cover and shim) in accordance with the assembly drawing, including Bill of Material items, and detail parts shown below:

<u>Qty per Assembly</u>	<u>Qty Total</u>	<u>Drawing</u>	<u>Rev.</u>	<u>Description</u>
1	2	W-817478	0	Switch Actuator Assy
1	2	D-816891-C	0	Cover
1	2	D-816891-D	0	Switch Base
2	4	D-816891-E	0	Shim

Fabricator is to ship assembled Switch Supports as soon as practical and separate from other equipment to:

Stock Equipment Company
 16490 Chillicothe Road
 Chagrin Falls, OH 44022

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Shipment is to be marked "For installation on Neutron Detector being fabricated on Bechtel Purchase Order AXC-20930." All charges related to fabrication and assembly of these Switch Supports are to be itemized separately from that related to the Pour Spot Bellows Assemblies.

- F. Fabricate and assemble Sight Glass Assembly in accordance with the assembly drawings, including Bill of Material items, and detail parts shown below:

	<u>Qty per</u> <u>Assembly</u>	<u>Qty</u> <u>Total</u>	<u>Drawing</u>	<u>Rev.</u>	<u>Description</u>
	1	2	W-823460	0	Sight Glass Assy , Sh. 5
(C)	1	2	W-823464	4	Window Assembly
	1	2	W-823499	0	Mirror Assembly
	1	2	D-824838-A	0	Frame (Back)
	1	2	D-824839-A	0	Frame (Front)
(C)	1	4	D-824840-A	9	Window
(C)		(2 Spares identified as EN #S999-350-20-10)			
	1	2	D-824841-A	0	Mirror
	1	2	D-824841-B	0	Adjustment Arm
	1	2	D-824842-A	0	Swivel
	1	2	D-824842-B	0	Cap
	1	2	D-824842-C	0	Plate
	1	2	D-824843-A	2	Bracket (Support)
(C)	1	2	D-824844-A	4	Window Tool
	1	2	D-824845-A	0	Housing
(C)	46	92	D-824845-B	0	Plunger
	1	2	D-824845-C	0	Housing
	1	2	D-824845-D	0	Plate
	1	2	D-824846-A	0	Front Plate
	1	2	D-824846-B	0	Spacer
	1	2	D-824846-C	0	Back Plate
	9	18	D-824846-D	0	Spacer
	8	16	D-824846-E	0	Roller
	2	4	D-824846-F	0	Spacer

- (C) Fabricator is to ship above assemblies plus one spare window (EN S999-350-20-10, D-824840-A) separately from Pour Spot Bellows Assemblies when completed. Shipping instructions are to be identical to that indicated in Section VI

All charges related to fabrication and assembly of the Sight Glass Assemblies are to be itemized separately.

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III. WELDING

A. Governing Requirements for Fabricated Parts

All welds on this assembly shall be strength welds, unless otherwise specified on drawings, performed in accordance with requirements of Du Pont Specification SG5S and SG5.1S or, fabricators standard procedure if approved by Du Pont.

All welds shall be examined using the liquid penetrant method as outlined in ASME Code, Section V, Article 6.

The fabricator shall submit written procedures for welding 304L stainless steel, Inconel® 690 to 304L stainless, Hastelloy C-276 to 304L stainless, and for welding any other combination of metals called for on the drawings. These procedures will be reviewed and approved by Du Pont prior to fabrication.

B. Governing Requirements for Bellows Assemblies

All requirements specific to welding, non-destructive testing and protection for shipment of bellows assemblies at the fabricator vendor's shop are included on bellows assembly and detail drawings shown below and on bellows vendor drawings included in Du Pont Blue Print File (BPF #218813).

<u>Drawing No.</u>	<u>Rev.</u>	<u>Description</u>
<u>W-816001</u>	1	Actuator Bellows Shipping & Handling Assy
<u>W-816014</u>	1	Lower Bellows Shipping and Handling Assy
<u>W-816015</u>	2	Upper Bellows Shipping and Handling Assy
<u>D-815272</u>	3	Upper Adapter Bellows Sh. 1
<u>D-811173</u>	6	Upper Adapter Bellows Sh. 2
<u>D-815273</u>	0	Lower Adapter Bellows Sh. 1
<u>D-811171</u>	5	Lower Adapter Bellows Sh. 2
<u>D-815274</u>	8	Actuator Bellows Sh. 1
<u>D-811172</u>	10	Actuator Bellows Sh. 2

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IV. TESTING REQUIREMENTS

- A. Individual bellows assembly testing requirements to be performed by the bellows vendor are outlined on the detailed bellows drawings listed under III.B.
- B. At final inspection all aspects of the fully assembled pour spout bellows assembly are to be satisfactorily demonstrated. As a minimum the testing requirements shall include:
 - 1. Manually compressing and extending the spring-loaded upper adapter bellows assembly by turning the appropriate acme nut on the assembly. The upper bellows assembly shall compress and extend smoothly between its compressed and extended limits without binding in acme nut, arms, slides, guides, spring mechanisms, etc. Assembly shall be operated sufficiently to verify results and satisfy inspection requirements.
 - 2.a. Manually compressing the lower adapter and actuator bellows assemblies to established limits built into assemblies utilizing counter weight and appropriate acme screw stop. Both the lower adapter and actuator bellows assemblies shall compress smoothly with no air or nitrogen pressure in the actuator bellows without binding in acme screw, arms, slides, guides, etc. Assembly shall be operated sufficiently to verify results and satisfy inspection requirements.
 - b. Extending the lower adapter and actuator bellows assemblies by gradually applying clean dry air or nitrogen pressure to the actuator bellows assembly in accordance with information shown on Attachment "A". Record minimum pressure required to fully extend actuator bellows with counterweight to stop position. Lower adapter and actuator bellows assemblies shall extend smoothly from the compressed limits to the extended limits, built into lower adapter bellows and set for the actuator bellows by the acme screw, without binding in arms, slides, guides, etc. Assembly shall be operated sufficiently to verify results and satisfy inspection requirements.

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- c. Verifying that acme screw is capable of stopping and holding actuator bellows in any set position under maximum actuator bellows operating pressure of 15 psig for one hour. Actuator bellows assembly pressure shall be shut off leaving air in the bellows assembly to verify leak tight installation of assembly. No reduction in pressure is permissible over this time period. Setting of acme screw, air pressure in bellows assembly, time at pressure and any other pertinent details are to be recorded. This test shall be repeated at least once at a different position of acme screw to verify results and satisfy inspection requirements.
3. Actuation of upper and lower adapter bellows assembly against a stationary surface to verify operation of belville washer spring ring. Various thicknesses of shim stock are to be placed on one side of surface to be contacted to cause deflection of one side of belville washer spring ring. Specifics of test set-up are to be recorded and repeated at least once to verify results.
4. Vacuum testing of upper and lower adapter bellows section in accordance with requirements shown in Attachment "A". to a maximum of 80 in. H₂O vacuum for one hour to verify leak tightness of assembly. This is to be accomplished by appropriately sealing the upper and lower adapter flanges, extending bellows assemblies and pulling a vacuum on this section through the exhaust port or other suitable location. Once vacuum level is established, vacuum line shall be shut off retaining vacuum on assembly. No reduction in vacuum setting is permissible over this period. Position of bellows, vacuum settings, time under vacuum and any other pertinent details of test are to be recorded. This test shall be repeated at least once at a different position of bellows assemblies to verify results and satisfy inspection requirements.

V. PACKAGING

The pour spout bellows assemblies shall be individually packaged in accordance with requirements shown in Attachment "B". An enclosed vehicle shall be used for shipment of each pour spout bellows assembly.

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The packaging shall allow for handling of the crate and pour spout bellows assemblies by a fork lift truck.

VI. SHIPPING INSTRUCTIONS

- A. The second pour spout bellows assembly (EN S350-185-20) assembled is to be shipped to the following address and marked "For use on Bechtel Order AXC-20930, Project 9S1780".

Stock Equipment Company
16490 Chillicothe Road
Chagrin Falls, Ohio 44022

- B. The first pour spout bellows assembly (EN S999-350-20) assembled and designated as the spare assembly is to be shipped to the following address and marked "For Use on DWP: Pour Spout Bellows - Operability Test in FNX, WR 864098".

E. I. du Pont de Nemours & Co., Inc.
Construction Project Manager
Central Shops Receiving
Dunbarton, SC 29808
Attn: Material Expediter - Construction
Building TC-1

VII. SURVEILLANCE (Inspection)

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each surveillance is required by telephoning (302) 451-0200.
2. When major components or service are obtained from subvendors, the QAFR may check these items at the point of manufacture. It is the fabricator's responsibility to include Du Pont surveillance and notification requirements in suborders.

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B. Fabricator's QA Manual/Procedure Requirements

1. The fabricator shall have, in place, and functioning a material control procedure which addresses the control, segregation, identification, and use of the material to be used, including welding consumables. Special care should be taken with Du Pont furnished material.
2. The fabricator shall have, in place, and functioning a procedure(s) which address special processes. Special processes are defined as: welding, heat treatment (if applicable), nondestructive examination, and testing. The procedure(s) shall address: using written procedures for operations to be performed and the qualification of personnel.
3. The fabricator shall have, in place and functioning a procedure for the calibration of measuring and test equipment. Calibration standards shall be traceable to nationally recognized standards.
4. The fabricator may utilize their own procedure for the control of nonconformances or refer any nonconformances to the QAFR for resolution.
5. A Quality Control Manual which satisfies the ASME Code, Section VIII, Division 1, Appendix 10 will also satisfy the intent of Paragraphs 1 through 4 above.

C. Prefabrication Surveillance Meeting

The first visit will be initiated by S.E. Hicks, QA Engineer, (302) 366-2116. The inspection and specification requirements will be reviewed with the valve fabricator's manufacturing and quality control personnel. A tentative schedule of future inspection visits will be established at this meeting.

D. Schedule

Fabricator shall request inspection at the following points:

1. Preliminary visit - After material has been received.
2. Intermediate visit - To witness initial liquid penetrant examinations and check detail parts.

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3. Final visit - To witness assembly and testing (Joint inspection).

E. Instructions

The following inspections will be performed by the QA/R.

1. Prefabrication Surveillance Meeting

- a. Discuss, in detail, specification and drawing requirements with the fabricator.
- b. Discuss the requirements of the surveillance specification.
- c. Investigate the proposed sequence of fabrication and adjust the surveillance schedule to fit that sequence.

2. Preliminary Visit - After material has been received.

- a. Review the procedures the fabricator proposes to use on this order and ensure that they are adequate.
- b. Assure that the proper welding procedures are being employed.
- c. Assure that welders are being qualified to established welding procedures.
- d. Assure that the liquid penetrant examination procedure to be used is in accordance with the requirements of the ASME Code, Section V.
- e. Review any machining in-progress.
- f. Review the fabricator's material control system, assuring it is in accordance with the written procedures and judging the adequacy of the system to prevent the use of Du Pont furnished material on other work.

3. Intermediate Visit - To witness initial liquid penetrant examinations and check detail parts.

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- a. Review the fabricator's Non-Destructive Examination (NDE) procedures assuring they are in accordance with specified requirements.
 - b. Review the qualifications of the NDE personnel assuring they have been properly qualified.
 - c. Witness the initial liquid penetrant examinations assuring that procedures are being followed and examinations are performed by qualified personnel. Review and initial the test certificates for this examination. IF the testing was satisfactorily performed, allow the fabricator to proceed with the remaining root-pass liquid penetrant examinations as long as test certification is provided for each test. Otherwise, witness all root-pass examinations.
 - d. Review any machining or welding in process.
 - e. Witness any dimensional inspections of detail parts being performed at this time.
 - f. Review specified finishes to assure they are as specified.
 - g. Assure that proper materials are being used.
4. Final Visit - To witness assembly and testing (Joint Inspection)
- a. Witness the final liquid penetrant examination of all welds.
 - b. Witness the assembly of the pour spout bellows assemblies, noting any difficulties encountered during assembly.
 - c. Witness the testing (Joint Inspection) of the pour spout bellows assemblies. Note any obvious shipping or handling damage to the bellows assemblies.
 - d. Visually check the assembly for harmful distortion after tests.

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- e. Witness any disassembly (if applicable) of the pour spout bellows assemblies for shipment. Review the fabricator's precautions to protect fragile parts during shipment. Review fabricator's plans to place shipping indicators on the packages of the shipment (if applicable).
- f. Review any coatings and special preparations required for shipment such as reinsertion of bellows shipping spacer bolts to prevent extension or compression of bellows during shipment.

F. Documentation

1. The fabricator shall prepare a documentation inventory transmittal sheet (listing all documents and number of pages) and attach to each set of documentation.
2. Each sheet of documentation shall list Du Pont P.O. number, equipment identification, and be consecutively numbered.
3. The Du Pont QAFR shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance prior to release for shipment.
4. The fabricator shall forward documentation at time of shipment as follows:

- a. One complete set (including signed documentation inventory transmittal sheet) to be included with shipment and marked as follows:

Attn: Receiving Supervisor - Construction
Savannah River Plant

- b. Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

Attn: Construction Material Expeditor Building
CAB/CS

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- c. One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108

Attn: S. B. Hicks

5. The Du Pont QAFR shall verify transmittal of documents per the general conditions of order and state verification in night message.
6. The supplier shall submit the following documentation:
 - a. Mill Test Reports
 - b. Certification for the pressure test of the boltons
 - c. Liquid penetrant logs, if applicable.

THE VENDOR SHALL ATTACH TO EACH PIECE OF EQUIPMENT AN EMBOSSED OR ENGRAVED PLASTIC OR STAINLESS STEEL TAG BEARING THE DU PONT ORDER NUMBER AND ENGINEERING NUMBER AS INDICATED.

SPECIFICATION

ATTACHMENT "A"
POUR SPOUT BELLOWS ASSEMBLY
TEST SCHEMATIC

Item

1. Actuator bellows installed per W801823
 - Maximum design pressure: 15.3 psig (D011172)
2. Pressure connection to pour spout bellows assembly
 - Connection - by fabricator
3. Flow Restrictor
 - 1/4" needle valve or 1/16" orifice placed in exit port of 3-way valve (item 3) - by fabricator
4. Pressure Gage
 - Readable from 0 to 20 psi and accurate to 1/4 psi - by fabricator
5. 3-Way Valve
 - 1/4" valve - by fabricator
6. Relief Valve
 - 1/4" set to relieve at 15 psig $\pm$ 3 psi - by fabricator
7. Pressure Regulator
 - 1/4" self bleeding suitable for maximum flow of 1 CFM, adjustable from 0 to 50 psi and accurate to 1/2 psi, 30 psi min supply pressure rating - by fabricator
8. Shut-Off Valve
 - 1/4" valve - by fabricator

Item

Description

- Vacuum connection to pour spout bellows assembly
- Connection - by fabricator
- Shut-off valve
- 1/4" valve or larger - by fabricator
- Pressure gage
- Readable from 0 to 80" H₂O vacuum and accurate to 1" H₂O vacuum - by fabricator
- Pressure gage
- Readable from 0 to 20" H₂O vacuum and accurate to 1/2" H₂O vacuum - by fabricator
- Vacuum relief valve
- 1/4" or larger set to relieve at 80" H₂O vacuum - by fabricator
- Vacuum adjustment valve
- 1/4" valve or larger - by fabricator

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ATTACHMENT "B"

POUR SPOUT BELLOWS ASSEMBLY PACKAGING (Page 1 of 2)

- A. A pour spout bellows assembly will be packaged as an assembly complete with test equipment shown on Attachment "A" and with instructions for handling and installation.
- B. The package will be a reusable wooden crate with the pour spout bellows assembly mounted on a reusable skid within the crate.
- C. Package as follows:
 - 1. With the assembly firmly secured to the turntable, the Acme screws D-188702-A and D-188802-B, as shown on W804231, will be rotated so that the bellows may be immobilized by installing the shipping and handling assemblies W816014 and W816015 in the upper and lower bellows only.
 - 2. Yellow tag each shipping and handling assembly in the upper bellows with the instruction: "Remove with caution. May be under spring force. If necessary, relieve spring force by turning Acme screw D-188702-B".
 - 3. Yellow tag Acme screw D-188702-B with the instruction: "Remove four shipping and handling assemblies, W801614, from upper bellows, then turn screw to raise the screw to its lower stop to compress the upper bellows."
 - 4. Yellow tag each shipping and handling assembly in the lower bellows with the instruction: "If necessary, relieve spring force by neutralizing actuator bellows counterweight."
 - 5. Yellow tag Acme screw D188702-A with the instruction: "Remove four shipping and handling assemblies, W801614, from lower bellows allowing the lower bellows to compress, then turn screw to raise the screw to its lower stop."
 - 6. Using the bale, lift the assembly and place it on the reusable skid. Using threaded fasteners in the holes in the base, the pour spout bellows assembly will be attached to the reusable skid.

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ATTACHMENT "B"

POUR SPOUT BELLOWS ASSEMBLY PACKAGING (Page 2 of 2)

7. The test equipment, Attachment "A", will be connected to the pour spout bellows assembly and wired to the frame of the assembly. The pressure regulator will be yellow tagged with the instruction: "Use a 90 psi maximum clean, dry compressed air or nitrogen supply and set this regulator to deliver 10 psi".
 8. The complete assembly, tagged and skidded, will be lifted by the bale D-188703-C and placed in the reusable crate. The bale will be wired to the frame and yellow tagged with the instruction "use to lift the assembly".
 9. A copy of these instructions, W801823, W803450, W804231, W816014, W816015 and Attachment "A" will be placed in a ziplock bag and attached to the assembly. The crate will be closed and provided with weather protection.
- D. Threaded fasteners will be used for covers and holddowns so that the package may be reused.
- E. The packaging shall allow for handling of the crate and of skidded assembly by fork lift truck.
- F. Packaging shall be such as to insure against damage during shipping and handling.

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YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING CONSTRUCTION DIMENSION DRAWINGS IN WEEKS AFTER RECEIPT OF PURCHASE ORDER.

- A. One reproducible is required for Du Pont design and construction purposes.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

<u>Plant</u>	<u>Savannah River</u>
<u>Project</u>	<u>9S1780</u>
<u>Du Pont Order No.</u>	<u>AXC-8901-W</u>
<u>EN Numbers</u>	<u>S350-185-20</u> <u>S999-350-20</u>

- C. The following information is required.

- Layout and orientation
- Overall dimensions
- Mounting dimensions
- Connection locations

Fabrication is released upon receipt of purchase order.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

 DEPARTMENT OF ENERGY
 CONTRACT DE-AC09-76SR00001
 VC: 02571

 SAVANNAH RIVER PLANT
 P.O. BOX 117 (13) Augusta, GA. 30913
 (TWX 810-771-2871) TEL 803-725-6211 WU AUGUSTA GA1

DATE		
MO	DAY	YR
07	09	86

ORDER NO.	Alt 1
AXC 8941W	

 TO (803) 783-1880
 Fluorocarbon
 Components Division
 P. O. Box 9889
 Columbia, SC 29290

 FURNISH
 PACKING
 LIST
 FOR EACH SHIPMENT

 ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
 SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
 INVOICE.

 Please mail 2 copies of your invoice
 to the above address.
 ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

 PROMISED SHIPPING
 DATE

 YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOP
 OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
 ONLY CERTIFIED FOR NATIONAL DEFENSE
 USE UNDER OPS REGULATION 11

 B ☐ CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

3	S999-350-10-5	O-Rings - Flange Body Metallic (Spare)	
---	---------------	---	--

ADD TO ORDER:

3	S350-185-10-6	O-Rings - Nozzle A&T Hydrotest	\$ 347.75
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3	S999-350-10-6	O-Rings - Nozzle A&T Hydrotest	\$ 347.75
---	---------------	-----------------------------------	-----------

 Per Spec. 3-8941 Rev. 1 dated 06/27/86
 attached and made part of this order.

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price \$20,710.00
Alt. Increase 2,186.74
New Total Firm Price \$22,896.74

per vendor quote #860729-2 dated 7/29/86.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

3-8941

ORDER NO

EXECUTED BY
A. M. Lawrence

ORIGINATOR

1-0-0-0

DEST

AXC-8941-W A1

ISSUING POINT XXXXX
AUGUSTA, GA. Wilm, DE

BUYER

AMOUNT \$.00

ITEM NO

GENERAL LEDGER & COST CODE

9S1780

mfc

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

 PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
 AND USE TAXES PURSUANT TO EXEMPTION
 CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
 PONT DE NEMOURS & COMPANY TO PURCHASE ALL
 TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
 PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
 CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SRC0001
VC: 02571

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(ITWX 810-771-2671) TEL 803-725-8211 WU AUGUSTA GA

DATE		
MO	DAY	YR
07	09	86

ORDER NO. Alt 1
AXC 8941W

TO (803) 783-1880
Fluorocarbon
Components Division
P. O. Box 9889
Columbia, SC 29290

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICE

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BODY OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER OPS 1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1)	EXEMPT FROM NATIONAL DEFENSE USE UNDER OPS REGULATION 1
		A ☒	B ☐

CASH TERMS	VIA	FOB
ITEM NO.	QUANTITY	DESCRIPTION
		PRICE

"W" O-RINGS

Modify order in part, as per the "latest" revised specification.

THIS IS AN UNPRICED ALTERATION. IT IS IMPERATIVE THAT YOU NOTIFY US OF ANY CHANGE IN PRICE BY 7/31/86. PRICES MUST REFLECT LIST, DISCOUNT AND NET FOR EACH ITEM. In addition, you must advise if any change in the date of submission of approval and/or final drawings and/or shipping date will occur as a result of this alteration. All terms and conditions established in our original order, except as modified herein, shall continue in full force and effect. FAILURE TO PROVIDE THIS INFORMATION (EVEN IF NO CHANGE) IN A TIMELY MANNER WILL DELAY PAYMENT OF YOUR INVOICE AS THE ALTERATION CANNOT BE PRICED AND FORWARDED TO ACCOUNTS PAYABLE UNTIL THIS DATA IS RECEIVED IN THIS OFFICE.

3 S350-185-10-5 O-Rings - Flange Body
Metallic

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
ORDER NO.		EXECUTED BY A. M. Lawrence	3-8941
DEST	AXC-8941-W A1	ISSUING POINT XX AUGUSTA, GA. Wilm, DE	ORIGINATOR 1-0-0-C
ITEM NO.	GENERAL LEDGER & COST CODE	BUYER	AMOUNT
9S1780			\$ 2186.74
mfc		DIRECT ALL INQUIRIES TO THE ABOVE BUYER.	
		PURCHASE EXEMPT FROM SOUTH CAROLINA AND USE TAXES PURSUANT TO EXEMPT CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION	
		APPROVED FOR DU PONT	

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR METALLIC "O" RINGS

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 8

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR METALLIC "O" RINGS

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING - BODY FLANGE "O" RINGS

The following dates have been established to meet the Defense Waste Processing Facility program schedule:

A. Procurement Dates

1. Quotations are due on or before October 23, 1985.
2. Place order by November 15, 1985.

B. Shipping Date

Material must be shipped by March 14, 1986.

II. TIMING - NOZZLE A & T - HYDROTEST "O" RINGS

A. Procurement Dates

1. Quotations are due on or before July 30, 1986.
2. Place order by August 15, 1986.

B. Shipping Date

Material must be shipped by November 15, 1986.

III. SHIPPING INSTRUCTIONS

(C) Ship to:

Chicago Bridge & Iron
1500 North 50th Street
Birmingham, AL 35212

Mark: Attention Susan Goertz
Nozzle A&T Test O-Rings
For use on Du Pont Order AXC-6247-W
C = Changed

N = New
2672W/jel

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 1

I. IDENTIFICATION

EN S350-185-10-5 Flange - Body, Metallic "O" Rings - Canyon
Melter
EN S999-350-10-5 Flange - Body, Metallic "O" Rings - Spare
Melter
(N) EN S350-185-10-6 Nozzle A & T Hydrotest "O" Rings
(N) EN S999-350-10-6 Nozzle A & T Hydrotest "O" Rings

II. APPLICATION

- A. The body flange "O" rings will be installed in the flange of a glass melter shell. Seal load is 825 pounds per inch. Operating pressure will be a negative pressure of -8" WC (8" water vacuum).
- (N) B. The hydrotest "O" rings will be installed in flanges to fit glass melter top head Nozzles A & T. Test pressure will be 18 psig. Normal operating pressure will be -8" WC (8" water vacuum).

III. DESCRIPTION

- A. EN S350-185-10-5
EN S999-350-10-5

Body Flange "O" Ring - Fabricate six (6) "O" rings from 1/2" od x .050" wall 304 sst tubing, formed to 105.784/105.768" od, and silver plated .003/.004" thick.

1. The body flange "O" ring will be installed in a groove having the following dimensions per CBI Drawing 44991-41, Rev 0:

OD: 106.040/106.002
ID: 104.730/104.712
Depth: .425/.415

2. Vendor to verify compatibility of the plated "O" ring dimensions with the groove geometry for the body flange.

- (N) B. EN S350-185-10-6
(N) EN S999-350-10-6

Nozzle A & T hydrotest "O" rings - fabricate six (6) "O" rings per fluorocarbon #U-7832-13750 SOB. (304 sst, .25" tube diameter, .032" wall thickness, 13.750 ring O.D., self-energizing on outside, silver plated .003" thick.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 2

1. These "O" rings will be installed in a groove having the following dimensions per Sketch JDG-686:

O.D.: 13.780/13.773"
I.D.: 12.950/12.940"
Depth: .200/.195"

2. Vendor to verify compatibility of the plated "O" ring dimensions with the groove geometry.

IV. REFERENCE DRAWINGS

<u>Drawing No</u>	<u>Rev</u>	<u>Description</u>
44991-41	0	Dowels/Studs for Shell Flange

V. PACKAGING AND SHIPPING

"O" rings are to be packaged to prevent damage during handling and transit. This shall include use of wood crates.

VI. SURVEILLANCE SPECIFICATION

A. Surveillance

1. Surveillance of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each surveillance is required by telephoning (302) 366-3601.
2. When major components or service are obtained from subvendors, the QAFR may check these items at the point of manufacture. It is the vendor's responsibility to include Du Pont surveillance and notification requirements in suborders.

B. Vendor QA Manual/Procedure Requirements

1. The supplier shall have in place and functioning a procedure for the control of special processes. Special processes are defined as welding and silver plating.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 3

2. The supplier shall have in place and functioning a procedure for the control and calibration of measuring and test equipment. Calibration shall be traceable to nationally-recognized standards.

C. Surveillance Schedule

Vendor to request surveillance at the following points:

1. Preliminary: Prior to plating
2. Final: During the plating operation

D. Surveillance Instructions

The following will be performed by the QAFR:

1. Preliminary: Prior to plating
 - a. Assure any welding done was performed in accordance with a nationally-recognized standard (ASME Section IX, AWS, D11, etc).
 - b. Visually monitor the quality of the welding performed to SG515 criteria. The weld shall have a finish compatible with silver plating operation.
 - c. Witness the dimensional inspection of the ring prior to plating. The supplier should be recording dimensions measured for future reference. The diameter of the rings should be measured and the measurements recorded in at least four (4) places. In addition, the diameter of the tubing should be measured in at least eight (8) places, four in the axial direction and four in the radial direction. These measurements should be maintained for comparison with the plated rings.
2. Final: During the plating operation
 - a. Review the procedure for the silver plating operation assuring the operation is carried out in accordance with the procedure.
 - b. Witness the plating operation.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 4

- c. Visually check the quality of the silver plating.
- d. Witness the final dimensional inspection of the rings confirming the proper thickness of silver plate.
- e. Review proposed preparations for shipment.

E. Quality Assurance Documentation

- 1. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- 2. Each set of certification data shall include the following:
 - a. Chemical analysis of the 1/2" OD, 304 sst tubing.
 - b. Recorded dimensions, including tolerance level, of dimensions covered in Paragraph VI.D.1.c.
- 3. Each certification page shall include the following information:
 - 304 sst Material
 - Du Pont Order AXC-8941-W
 - EN Numbers
- 4. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.
- 5. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraphs VI.B.1 and VI.B.2, to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviere Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 5

6. The remaining sets shall be sent at time of shipment as follows:
- a. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 - b. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 6

C. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE - S. B. Hicks

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8941
REV: 1
DATE: June 27, 1986
PAGE: 7

VII. VENDOR DRAWINGS

YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING DRAWINGS AS FOLLOWS:

Design Approval Drawings in weeks after receipt of order.
Final Drawings in weeks after return of all Design Approval Drawings.

- A. One reproducible of Design Approval Drawings required.
One reproducible of Final Drawings required.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

Plant: Savannah River
Project: 9S1780
Du Pont Order No: AXC-8941-W
EN Numbers: S350-185-10-5
S999-350-10-5

- C. The following information is required for approval:

Overall dimensions and tolerances of "O" ring and groove Material

- D. Design Approval Drawings:

These drawings must be submitted before we will release start of fabrication. One print of each drawing will be returned stamped "Approved", "Approved as Noted", or "Not Approved". Fabrication will be released according to a note on the transmittal letter covering the returned prints. Upon receipt of all "approved" and "approved as noted" drawings, vendor shall revise to include all changes and return for our use as Final Drawings. "Not approved" drawings must be corrected and resubmitted for approval.

- E. Final Drawings:

These drawings are for Du Pont design and construction purposes.

SPECIFICATION 3 - 8941

SKETCH JDG 686

JUNE 27, 1986

Groove Dimensions for Nozzle A & T Hydrotest "O" Rings

Fluorocarbon "O" Ring # U-7832-13750-S08

EN S 350-185-10-6

EN S 999-350-10-6

J. D. Gutmann Jr
6/27/86

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-78SR00001

VC: 06878

SALAMANCA RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913

(TWX: 810-771-2871) TEL 803-725-8211 WL: AUGUSTA GA)

DATE		
MO	DAY	YR
07	22	85

ORDER NO.

AXC 6844W

TO

(302) 478-4900
Inco Alloys International, Inc.
P. O. Box 7207
Wilmington, DE 19899

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

06/28/85

6/28/85

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
DD-4-1 (CERTIFIED FOR NATIONAL DEFENSE)
USE UNDER DPM REGULATION 11.

6-111 OR CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS
N30

VIA

FOR

Huntington, WV- Ppd. & Add

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
1		S350-185-10-1 Inconel 690 Material	
1		S999-350-10-1 Inconel 690 Material	
INCONEL ALLOY 690 COLD ROLLED SHEET, COLD ROLLED			
Item 1-	.148" x 28.000" x 120" - 10 pcs - 1472#		\$7.52/lb. - \$11,069.44
INCONEL ALLOY 690 HOT ROLLED PLATE, DESCALED, ANNEALED			
Item 2-	.250" x 54.000" x 100.000" - 1 pce - 416#		\$6.69/lb. - \$2,783.04
Item 3-	.375" x 54.000" x 100.000" - 1 pce - 621#		\$6.59/lb. - \$4,092.39
Item 4-	.406" x 41.000" x Nominal Lengths-50' 2956#		\$6.59/lb. - \$19,480.04
Item 5-	.500" x 54.000" x 100.000" - 1 pce - 826#		\$6.54/lb. - \$5,402.04
Item 6-	.750" x 54.000" x 100.000" - 1 pce - 1231#		\$6.48/lb. - \$7,976.88
Item 7-	1.000" x 54.000" x 100.000" - 1 pce - 1642#		\$6.38/lb. - \$10,475.96
Item 8-	1.500" x 60.000" x 120.000" - 2 pcs - 6596#		\$6.33/lb. - \$41,752.68+
Item 9-	3.000" x 3.000" x 6.000" - 4 pcs - 64#		\$6.28/lb. - \$401.92+
Item 10-	3.000" x 16.000" x 25.500" - 10 pcs - 3730#		\$6.28/lb. - \$23,424.40+
Item 11-	3.000" x 17.500" x 26.500" - 10 pcs - 4240#		\$6.28/lb. - \$26,627.20+
Item 12-	4.500" x 12.500" x 40.500" - 6 pcs - 4164#		\$6.23/lb. - \$25,941.72+
Item 13-	4.500" x 15.500" x 40.500" - 6 pcs - 5160#		\$6.23/lb. - \$32,184.18+
TOT. HRP1 -			\$200,542.45

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO. Construction Project Manager
DEST Central Shops Receiving
AXC-6844-W

EXECUTED BY
J. V. Doxey

ISSUING POINT
XXXXXX Wilm, DE

ORIGINATOR

1-0-0-1

BUYER

AMOUNT
\$875,305.60

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

MC

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXE
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT NO. AC05-80OR00001SABANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30613

(TWX: 810-771-2671) TEL 800-728-8211 WIL AUGUSTA, GA)

DATE		
MO	DAY	YR
07	22	85

ORDER NO.
AXC 6844W

(302) 478-4900
Inco Alloys International, Inc.
P. O. Box 7207
Wilmington, DE 19899

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE. CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

06/28/85

6/28/85

XK

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPC REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SDC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-S-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPC REGULATION 1)

6-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPC REGULATION 1

CASH TERMS
N30

VA

F.O.B.

Huntington, WV- Ppd. & Ac

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
INCONEL ALLOY 690 HOT ROLLED FLATS			
Item 14	5.000" x 6.250" x 6.500"	-40 pcs -2405# @ \$7.92/lb.-\$19,047.60	
Item 15	5.250" x 6.500" x 13.500"	-10 pcs -1364# @ \$7.92/lb.-\$10,802.88	
TOT. HRFLT -			\$29,850.48
INCONEL ALLOY 690 HOT FINISHED ROUND, ROUGHT TURNED, ANNEALED			
Item 16	1.250" x Random Lengths - 500"	- 182# @ \$6.98/lb.-\$1,270.36	
Item 17	1.750" x Random Lengths - 400"	- 285# @ \$6.98/lb.-\$1,989.30	
Item 18	2.750" x Random Lengths - 400"	- 703# @ \$6.87/lb.-\$4,829.61	
Item 19	3.500" x Random Lengths -3000"	-8544# @ \$6.87/lb.-\$58,697.28	
Item 20	3.750" x Random Lengths -5000"	-16346# @ \$6.87/lb.-\$112,297.02	
Item 21	4.500" x Random Lengths -2000"	- 9415# @ \$6.83/lb.-\$64,304.45	
Item 22	5.500" x Random Lengths -1200"	- 8439# @ \$6.78/lb.-\$57,216.42	
Item 23	7.000" x Random Lengths - 500"	- 3696# @ \$6.78/lb.-\$25,068.88	
Item 24	8.000" x Random Lengths - 600"	- 8927# @ \$6.78/lb.-\$60,525.06	
Item 25	9.500" x Random Lengths - 700"	-14687# @ \$6.73/lb.-\$98,643.51	
Item 26	12.000" x Random Lengths - 600"	-20086# @ \$6.73/lb.-\$135,178.78	
TOT. HFRDS -			\$633,770.67
INCONEL ALLOY 690 COLD DRAWN PIPE, PICKLED, ANNEALED			
Item 27	3.000" Sch 40 x Random Lengths - 50'	- 400# @ \$83.94/ft.-\$4,197.00	
Item 28	.500" Sch 40 x Random Lengths - 10'	- 10# @ \$191.88/ft.-\$1,918.80	
TOT. CD PIPE -			\$6,115.80

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUESTION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

Construction Project Manager
Central Shops Receiving
AXC-6844-W

DEST

EXECUTED BY

J. V. Doxey

ISSUING POINT

XXXXXX WILM., DE.

ORIGINATOR

BUYER

1-0-0-0

AMOUNT
\$875,305.6

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

PROJECT NO.:
9201E/mcDIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXI
CERTIFICATE NO. 2139 WHICH AUTHORIZES
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SARASOTA RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30613
(TWX: 810-771-2871) TEL 803-725-8211 WJ: AUGUSTA, GA)

DATE		
MO	DAY	YR
07	22	85

ORDER NO.

AXC 6844W

VC: 06878

TO

(302) 478-4900
Inco Alloys International, Inc.
P. O. Box 7207
Wilmington, DE 19899

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-12

REQUIRED DELIVERY

PROMISED SHIPPING DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN CERTAIN PRODUCTS, MATERIALS AND SERVICES NEEDED TO FULFILL THIS ORDER. DDC-11 IDENTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 11.

D-11 IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

06/28/85

6/28/85

CASH TERMS

N30

VA

F.O.B.

Huntington, WV- Ppd. & Ac

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

Per Spec. 3-6844 Rev. 1 dated 01/09/85
attached and made part of this order.

Total Firm Price \$875,305.60

This confirms letter order placed 2/7/85
with Inco Alloys by K. L. Cornwell

DU PONT INSPECTION IS REQUIRED ON THIS ORDER. IF INSPECTION DETAILS ARE NOT IN THE ATTACHED SPECIFICATION, YOU WILL RECEIVE A LETTER SHORTLY DESCRIBING THEM. TO SCHEDULE AN INSPECTION, CALL QUALITY ASSURANCE ENGINEERING AT 302-366-3601 AT LEAST 48 HOURS BEFORE INSPECTION IS NEEDED.

TECHNICAL CONTACT: J. D. Gutmann, Jr. 302-366-3929

Quotation letters dated 11/13, 12/20, 12/28 & 2/8
by Rick Duncan.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

3-6844

ORDER NO.

Construction Project Manager
Central Shops Receiving
AXC-6844-W

ISSUING POINT

AUGUSTA, GA XXXXXXXX Wilm, DE

ORIGINATOR

1-0-

BUYER

AMOUNT

\$875,305.60

ITEM NO

GENERAL LEDGER & COST CODE

951780

MC

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE A TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001

(TWX: 810-771-2871)

TEL 803-725-6211

WL: AUGUSTA, GA)

VC: 06878

TO

(302) 478-4900
Inco Alloys International, Inc.
P. O. Box 7207
Wilmington, DE 19899FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
07	22	85

ORDER NO.

AXC 6844W

ORDER NUMBER AND EQUIP PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
(DATE)

06/28/85

6/28/85

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SEC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DO-8-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11

E-11 IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

CASH TERMS

N30

VA

P.O.

Huntington, WV- Ppd. & Acc

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

The following cutting charges will apply:

Item 8	- \$	468.00	total
Item 9	- \$	86.40	total
Item 10	- \$	996.00	total
Item 11	- \$	1,056.00	total
Item 12	- \$	1,176.00	total
Item 13	- \$	1,243.20	total

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUESTION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

3-6844

ORDER

NO.

Construction Project Manager

EXECUTED BY

J. V. Doney

ORIGINATOR

1-0-0-0

DEST

Central Shops Receiving

ISSUING POINT

XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$875,305.60

AXC-6844-W

ITEM NO.

GENERAL LEDGER & COST CODE

951780

MC

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXEN.
CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC08-78SR00001
VC: 06878

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30613
(TWX: 810-771-2871) TEL 803-725-6211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
06	17	86

ORDER NO. **Alt 3**
AXC6844W

TO

(302) 478-4900
Inco Alloys International, Inc.
203 Welding Bldg.
3411 Silverside Road
Wilmington, DE 19810

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SEC 14
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DPM-1 IDENTIFIED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 11

5-11: ON CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS

VA

FOE

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

ALTERATION ISSUED TO INCLUDE ADDITIONAL COST FOR
"EXCESS MATERIAL" PROVIDED BY VENDOR AND RECEIVED
BY DU PONT.

INCREASE PER THIS ALTERATION AMOUNTS TO \$39,682.08.

1	S350-185-10-1	Inconel 690 Material
1	S999-350-10-1	Inconel 690 Material

Previous Price	\$886,374.44
Alt. 3 Increase	\$39,682.08
New Total Firm Price	\$926,056.52

TECHNICAL CONTACT: J. D. Gutmann, Jr. 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		PRIORITY RATING/ACM EXECUTED BY	REQUISITION NUMBERS
ORDER NO.		EXECUTED BY <i>Lawrence</i>	3-6844
DEST	AXC-6844-W A3	ISSUED POINT XXXXX Wilm, DE	ORIGINATOR 1-0-0-
ITEM NO.	GENERAL LEDGER & COST CODE		BUYER \$39,682.08
951780			
mka			
IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.			<p>DIRECT ALL INQUIRIES TO THE ABOVE BUYER.</p> <p>PURCHASE EXEMPT FROM SOUTH CAROLINA SAL AND USE TAXES PURSUANT TO F CERTIFICATE NO 2139 WHICH AUTHORIZES PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE & PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION</p> <p>APPROVED FOR DU PONT</p>

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

S. DEPARTMENT OF ENERGY
CONTRACT. DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30813
(TWX: 810-771-2671) TEL 803-725-6211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
08	05	85

ORDER NO.
Alt-7
AXC 6844M

VC: 06878

TO
(302) 478-4900
Inco Alloys International, Inc.
P. O. Box 7207
Wilmington, DE 19899

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY
PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPE REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DPC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
DPC-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPE REGULATION 1).

D-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPE REGULATION 1

CASH TERMS
N30

VIA

P.O.B.

Huntington, WV- Ppd. & Ad

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

CORRECT TOTAL FIRM PRICE OF ORDER TO \$886,374.44.

Previous Price	\$875,305.60
Alt. 2 Increase	\$11,068.84
New Total Firm Price	\$886,374.44

TECHNICAL CONTACT: J. D. Gutmann, Jr. 302-366-3929

NOTE: THERE IS NO CHANGE TO ANY INDIVIDUAL COST FOR
ITEMS 1 THRU 28 OR FOR CUTTING CHARGES.
THIS ALTERATION IS TO CORRECT TOTAL FIRM
PRICE ONLY.

SHEET ☐ FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY.

3-6844

ORDER
NO.EXECUTED BY
J. D. Gutmann, Jr.

ORIGINATOR

1-0-0.

DEST

AXC-6844-W A2

ISSUING POINT

XXXXXX

Wilm, DE

BUYER

AMOUNT
\$11,068.84

ITEM NO. GENERAL LEDGER & COST CODE

9S178Q

clb

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO E.I.
CERTIFICATE NO 2139 WHICH AUTHORIZES E.I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE A
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

VC: 06878

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30913

(TWX: 810-771-2871) TEL 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
07	22	85

ORDER NO.
AXC 6844W

TO

(302) 478-4900
Inco Alloys International, Inc.
P. O. Box 7207
Wilmington, DE 19899

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.

DD-211 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 11.

S-11 OR CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

1 S350-185-10-1 Inconel 690 Material

1 S999-350-10-1 Inconel 690 Material

Per Spec. 3-6844 Rev. 2 dated 07/11/85
attached and made part of this order.

No change in price
which remains at \$875,305.60

TECHNICAL CONTACT: J. D. Gutmann, Jr. 302-366-3929

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

DEST

AXC-6844-W A01

ISSUING POINT

XXXXXXX Wilm, DE

ORIGINATOR

1-0-0-1

BUYER

AMOUNT
\$875,305.60

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

MC

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA AND USE TAXES PURSUANT TO EXL CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH-CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: A

DEFENSE WASTE PROCESSING FACILITY

PROCUREMENT SPECIFICATION FOR INCONEL 690 MATERIAL

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before November 19, 1984.
2. Place order by January 15, 1984.

B. Shipping Date

(C) Material must be shipped by end of August, 1985.

II. SHIPPING INSTRUCTIONS

All material on this order will be sorted and shipped to other vendors for fabrication of Inconel 690 assemblies. Detailed instructions for sorting and shipping destinations will be furnished at a later date.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 1.

I. IDENTIFICATION

<u>Engg. Nos. (EN)</u>	<u>Description</u>
S350-185-10-1	Inconel 690 Material
S999-350-10-1	Inconel 690 Material

II. SCOPE

A. General

This specification covers requirements for quantity, configuration, physical and chemical properties, certification, testing, and inspection of Inconel 690 material.

B. Application

This material will be used to fabricate heating elements, instruments, and other special assemblies which will be used to control and monitor the performance of the glass melter shown on Drawing W-732366. The melter will be operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable, borosilicate glass form.

III. REFERENCE DOCUMENTS

A. Drawings For Information

Drawing W-732366 is included for information only. This shows the melter assembly with internal insulation, refractory lining, and auxiliary equipment as fabricated from Inconel 690.

B. Ultrasonic Testing Procedures

Ultrasonic tests, Paragraph IV.F.4., shall be conducted in accordance with the following:

1. Bar Stock - Huntington Alloys Specification QCP #45, Rev 2.
2. Plate - Huntington Alloys Specification QCP #188.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 2

IV. INCONEL MATERIAL REQUIREMENTS

A. Material Quality

1. All Inconel material furnished on this order must be manufactured to meet stringent requirements for material quality. This is dictated by the unique operating conditions of the DWPF melter:
 - a. Once started up, the melter must operate continuously for a period of years. Some of the Inconel assemblies are a permanent part of the melter and cannot be repaired or replaced after start-up. Premature failure of these items would require the entire melter to be removed from service.
 - b. The Inconel will be subjected to a very corrosive environment at temperatures up to 1170°C.
2. It has been determined that the corrosion resistance of Inconel 690, in this application, is sensitive to the chromium content. All material on this order must contain a minimum 29% chromium by weight.

B. Quantity and Configuration

The following includes allowances for machining to the final size.

1. Cold Rolled Sheet

<u>Item</u>	<u>Description</u>	<u>Size In Inches</u>	<u>Qty</u>
1	Sheet for 8" pipe	.148 x 28.00 x 120.00	10

2. Hot Rolled Plate

<u>Item</u>	<u>Description</u>	<u>Size In Inches</u>	<u>Qty</u>
2	--	.250 x 54.00 x 100.00	1
3	--	.375 x 54.00 x 100.00	1
4	Plate for 12" pipe	.406 x 41.00 x 100.00	6

C = Changed
7424w/c1a

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-6844
 REV: 2
 DATE: July 11, 1985
 PAGE: 3

IV. INCONEL MATERIAL REQUIREMENTS (Cont'd)

<u>Item</u>	<u>Description</u>	<u>Size In Inches</u>	<u>Qty</u>
5	--	.500 x 54.00 x 100.00	1
6		.750 x 54.00 x 100.00	1
7		1.00 x 54.00 x 100.00	1
8		1.50 x 60.00 x 120.00	2
9		3.00 x 3.00 x 6.00	4
10	Film Cooler Flange	3.00 x 16.00 x 25.50	10
11	A&T Nozzle Flange	3.00 x 17.50 x 26.50	10
12	Lower Electrode	4.50 x 12.50 x 40.50	6
13	Upper Electrode	4.50 x 15.50 x 40.50	6
14		5.00 x 6.25 x 6.50	40
15	Lid Heater Jumper	5.25 x 6.50 x 13.50	10

3. Bar Stock

- (N) a. The following items, No. 16 through 26, shall be formed to the maximum practical length.
- (N) b. Minimum acceptable length for bar stock less than 12 inches in diameter is 10 feet.
- (N) c. Minimum acceptable length for Item 26, 12 inch diameter bar stock, is 8 feet.

<u>Diameter Item</u>	<u>Total Length In Inches</u>	<u>Inches</u>
16	1.25	500
17	1.75	400
18	2.75	400

C = Changed
 7424w/c1a

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-6844
 REV: 2
 DATE: July 11, 1985
 PAGE: 4

IV. INCONEL MATERIAL REQUIREMENTS (Cont'd)

<u>Item</u>	<u>Diameter In Inches</u>	<u>Total Length Inches</u>
19	3.50	3000
20	3.75	5000
21	4.50	2000
22	5.50	1200
23	7.00	500
24	8.00	600
25	9.50	700
26	12.00	600
4. <u>Cold Drawn Pipe</u>		
27	3.00 Schedule 40	600
28	0.50 Schedule 40	120

(N)

5. Excess Material

Du Pont will consider purchasing excess material on this order for each item and shape. The vendor shall submit a description and quote, for each item, for consideration.

C. Properties

1. Chemical Composition shall meet the following weight percentage values:

Chromium: 29.0 to 31.0 (see Para IV.A.2.)
 Nickel: 58.0 minimum
 Iron: 7.0 to 11.0

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 5

IV. INCONEL MATERIAL REQUIREMENTS (Cont'd)

Manganese: 0.5 maximum
Copper: 0.5 maximum
Silicon: 0.5 maximum
Carbon: 0.05 maximum
Sulfur: 0.015 maximum

2. Elongation shall be 30% minimum in 2".

D. Condition

1. All bar stock shall be hot finished rounds, rough turned or rough ground, and annealed per Paragraph IV.E.
2. All plate and sheet shall be hot rolled, descaled, and annealed per Paragraph IV.E.

E. Heat Treatment

All material shall be solution annealed to attain a grain size of ASTM Avg #5 or coarser.

F. Certification

1. Chemical composition shall be determined for each heat.
2. Grain size shall be determined for each item, Paragraph IV.B., after solution annealing.
3. Mechanical properties shall be determined by testing samples from each item, Paragraph IV.B., after solution annealing. These shall include the following:
 - a. Elongation
 - b. Ultimate tensile strength
 - c. Yield strength
 - d. Reduction of area

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 6

IV. INCONEL MATERIAL REQUIREMENTS (Cont'd)

4. The following ultrasonic tests shall be performed by Huntington Alloys. This may be done after the solution annealing treatment, provided that the surface is prepared per the ultrasonic testing specifications listed below.
 - a. All bar stock shall be ultrasonically tested per Huntington Alloys Specification QCP #45, Rev 2.
 - b. All plate shall be ultrasonically tested per Huntington Alloys Specification QCP #188.

(C) G. Identification

1. All material on this order shall be identified by the continuous marking with the following information:

Inconel 690
Heat Number
Lot Number
Du Pont Order Number
2. In cases where continuous marking is not possible, this information may be marked on the material using a vibratool.

V. PREPARATION FOR SHIPPING

- #### (C) A.
- An embossed or engraved plastic or stainless steel tag, bearing the following information, shall be attached to each piece:
- Project 9S1780
Du Pont Order AXC-6844-W
EN S350-185-10-1
EN S999-350-10-1
- #### B.
- See specification Page A for sorting and shipping instructions.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 7

VI. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.
2. See Paragraph VII. for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspection

Verify that the material meets the chemical composition requirements per Paragraphs IV.A.2. and IV.C.

2. Intermediate Inspection

a. Ultrasonic Inspection

- 1) Witness and approve ultrasonic equipment and procedures prior to testing per Paragraph IV.F.4.
- 2) Witness and approve a minimum of two ultrasonic tests.
- 3) Examine and approve the ultrasonic test record on completion of the tests.

b. Certification

Examine certification test reports and verify the following:

- 1) Elongation meets requirements per Paragraph IV.C.2.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 8

VI. INSPECTION (Cont'd)

- 2) Grain size meets requirements per Paragraph IV.E. and IV.F.2.
- 3) Mechanical properties have been determined per Paragraph IV.F.3.

3. Final Inspection

- a. Verify that Quality Assurance documents are complete per Paragraph VII. and sign the transmittal sheet.
- b. Verify quantity and sizes of material are correct per Paragraph IV.B.
- c. Verify that all items are marked per Paragraph V.A.
- d. Verify shipping arrangements per Paragraph II, Page A.

VII. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following:
 1. Chemical analysis for each heat.
 2. Grain size for each item.
 3. Mechanical properties for each item including elongation, ultimate tensile strength, yield strength, and reduction of area.
 4. Results of ultrasonic tests per Paragraph IV.F.4.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 9

VII. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

- C. Each certification page shall include the following information:

Inconel 690 Material
Project 9S1780
Du Pont Order #AXC-6844-W
EN S350-185-10-1
EN S999-350-10-1

- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.

- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraphs VI.B.1 and VI.B.2, to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann

- F. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6844
REV: 2
DATE: July 11, 1985
PAGE: 10

VII. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S. B. Hicks

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001

(TWX: 810-771-2871)

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA 30913

TEL 803-725-6211

WU: AUGUSTA, GA)

VC: 00942

(213) 341-2021
U. S. Welding
20700 Dearborn Street
Chatsworth, CA 91311

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
3	10	86

ORDER NO.	
AXC	Alt 2 6960W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN
CERTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.
DDC-11 (CONTINUED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 1)

S-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS

VA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Modify order in part, as per the "latest" revised
specification 3-6960, Rev. 1 dated 2/19/86 attached
and made part of this order.

S350-185-10-4 Wire - Inconel Welding

S999-350-10-4 Wire - Inconel Welding

Previous Price	\$62,520.00
Alt. 2 Increase	\$27,875.99
New Total Firm Price	\$90,395.99

Per Invoice 93968 dated 1/22/86
by Vendor

TECHNICAL CONTACT: J.D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

DEST

EXECUTED BY

J. E. Brown

ISSUING POINT

AUGUSTA, GA

ORIGINATOR

BUYER

AMOUNT

ITEM NO

AXC-6950-W-A2

GENERAL LEDGER & COST CODE

XXXXXXXXXX Wilm, DE

\$27,875.99

9S1780

bah

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6960
REV: 1
DATE: February 19, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY

PROCUREMENT SPECIFICATION

FOR

INCONEL 690 WELDING WIRE

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before November 21, 1984.
2. Place order by January 15, 1985.

B. Shipping Date

1. The following material must be shipped by July 15, 1985:
 - a. 400 lbs of .125 inch diameter wire
 - b. 400 lbs of .093 inch diameter wire
2. The vendor shall quote the earliest delivery for the balance of the order, consisting of 926.7 pounds of .093 inch diameter wire, 844.9 pounds of .125 inch diameter wire, and 189.3 pounds of .062 inch wire.

(C)

II. SHIPPING INSTRUCTIONS

- (C) A. Ship 50 pounds of .125 inch diameter wire, and 50 pounds of .093 inch diameter wire to:

Chicago Bridge and Iron Co.
1500 North 50th St.
Birmingham, AL 35201
Mark "Attention Susan Goertz
For Use On Du Pont Order AXC-6247-W

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B. Ship remainder of the .125 and .093 inch diameter wire, and all spools of .062 inch diameter wire, to:

Keller Technology
2320 Military Road
Tonawanda, NY 14150

Mark: "Attention Frank Steinhuckner
For Use On Du Pont Order AXC-6853-W"

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I. IDENTIFICATION

EN S350-185-10-4 Inconel Welding Wire (One Lot of Modified
EN S999-350-10-4 Inconel Alloy 690 Filler Composition)

II. SCOPE

A. General

This specification covers requirements for quantity, configuration, chemical composition, certification and inspection of one lot of modified Inconel 690 welding wire.

B. Application

This material will be used to weld Inconel 690 components, which will be installed in the glass melter shown on Drawing W-732366. The melter will be operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable, borosilicate glass form.

III. REFERENCE DOCUMENTS

Drawing W-732366 is included for information only. This shows the melter assembly with internal insulation, refractory lining, and auxiliary equipment installed.

IV. WELDING WIRE REQUIREMENTS

A. Material Quality

1. All welding wire furnished on this order must be manufactured to meet stringent requirements for material quality.

This is dictated by the unique operating conditions of DWPF melter:

- a. Once started up, the melter must operate continuously for a period of years. Some of the weldments are a permanent part of the melter, and cannot be repaired or replaced after start-up. Premature failure of these components would require the entire melter to be removed from service.

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b. The weldments will be subjected to a very corrosive environment at temperatures up to 1170°C.

2. It has been determined that the corrosion resistance of Inconel 690, in this application, is sensitive to the chromium content. All material on this order must contain a minimum 30% chromium by weight.

B. Quantity

- (C) 1. This order covers the product of a 3000 pound vacuum induction melted heat. Expected yield is 2000 pounds of welding wire. Actual yield was 2760.9 pounds.
- (C) 2. Breakdown of products by weight is:

<u>Wire Diameter</u>	<u>Weight</u>
.062"	189.3 lbs
.093"	1326.7 lbs
.125"	1244.9 lbs

C. Configuration

- (N) 1. The .062 inch diameter wire shall be furnished as continuous lengths on 12 inch diameter welding spools, approximately 25 pounds per spool.
2. The .093 inch diameter and .125 inch diameter wire shall be straightened and cut to 36 inch lengths.

D. Chemical Composition

The material shall have the following composition:

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<u>Element</u>	<u>Composition Range, % By Weight</u>
Cr	30.0 - 32.0 (See Para IV.A.2.)
Ni	Balance
Fe	8.0 - 11.0
C	0.02 - 0.08
Mn	0.05 - 0.30
Si	0.05 - 0.30
Al	0.5 - 1.1
Ti	0.2 - 0.7

<u>Element</u>	<u>Composition Range, % By Weight</u>
Cu	0.5 Maximum
O	0.0100 Maximum
H	0.0010 Maximum
N	0.0100 Maximum
Mg	Add .03
B	None added
S	As low as possible
P	As low as possible
Pb	As low as possible

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E. Certification

The vendor shall furnish a chemical analysis of the heat in accordance with Paragraph VII.

V. PREPARATIONS FOR SHIPPING

- (C) A. All .093 inch and .125 inch diameter welding wire shall be packaged in 10 pound aerospace industry packs for long shelf life.
- (N) B. The .062 inch diameter wire on welding spools shall be protected in a similar manner.
- C. Each package shall include the following information:
 - 1. Inconel 690 welding wire
 - 2. Wire diameter
 - 3. Project 9S1780
 - 4. Du Pont Order AXC-6960-W
 - 5. EN S350-185-10-1
EN S999-350-10-1
- D. See specification Page A for shipping instructions.

VI. INSPECTION SPECIFICATION

A. General

- 1. Inspection of this material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.
- 2. See Paragraph VII for documentation requirements.

B. Inspection Instructions

The Du Pont QAFR shall make the following inspections:

- 1. Review and approve the chemical analysis vs the required composition per Paragraph IV.D. This approval shall be obtained before the ingot is formed into bar stock.

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2. Verify conformance of welding wire to quantity and configuration per Paragraphs IV.B. and IV.C.
3. Review and approve shipping preparations per Paragraph V.

VII. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of the chemical analysis in accordance with the following schedule. Each set shall include a cover transmittal sheet identifying the analysis, and the number of pages.
- B. Each analysis page shall include the following information:

Inconel 690 Welding Wire
Project 9S1780
Du Pont Order AXC-6960-W
EN S350-185-10-4
EN S999-350-10-4
- C. The Du Pont QAFR shall review the analysis and signify acceptance by signing and dating the transmittal sheet.
- D. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VI.B.1, to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711

Attn: Mr. J.D. Gutmann
- E. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
- F. Two (2) sets, including signed inventory transmittal sheet, best way to:

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By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

- G. One (1) copy of signed inventory transmittal sheet (by mail)
to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S.B. Hicks

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001
VC: 00673

SAMANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30813
(TWX: 310-771-2871) TEL 803-725-6211 (WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
11	9	86

ORDER NO. 3115
AXC 6846W

TO (716) 483-7200
Carborundum Resistant Matls. Co.
Refractories Division
501 New York Ave.
Falconer, NY 14733

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on DSR 1-87.

REQUIRED DELIVERY DATE PROMISED SHIPPING DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DSR REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.

DOE-1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DSR REGULATION 11.

DOE-1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DSR REGULATION 11.

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Modify order in part to include shipping instructions per Specification 3-6846 Rev. 5 dated 11/26/85 attached and made part of this order. (See summary of changes page No. AA).

1	S350-185-12-10	Refractory-K-3 Monofrax	
1	S999-350-12-10	Refractory-K-3 Monofrax	

No change in price
which remains at \$942,962.35

This confirms verbal order placed 12/3/85 with Steve Graham by Ruth Bennett

Per verbal quotation dated 12/3/85 by S. Graham

TECHNICAL CONTACT: C. D. Jutmann, Jr. 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET ☐ FINAL ☐		PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		<i>John Barber 1/1/86</i>	3-6846
ORDER NO.		EXECUTED BY	ORIGINATOR
		L. J. Kane	1-0-0
DEST	AXC-6846-W A6	ISSUING POINT	BUYER
		XXXXXX Wilm, DE	AMOUNT \$942,962.3

ITEM NO.	GENERAL LEDGER & COST CODE
----------	----------------------------

951780

bah

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALE AND USE TAXES PURSUANT TO EXEMPTIO CERTIFICATE NO. 2109 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT. DO NOT INSURE SHIPMENT.

SPECIFICATION

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DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR K-3 MONOFRAX REFRACTORY

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SUMMARY OF CHANGES PER REVISION 3

Page

13 Section V.D, Item 4 - Paragraphs "b" thru "f" rewritten;
 added Sections "g", "h", and "i".

SUMMARY OF CHANGES PER REV. 4

Page

3 Item III.B CB&I drawings supersede original Du Pont drawings
 as shown.

SUMMARY OF CHANGES PER REV. 5

(N)

Page

B Added Shipping Instructions (See Page "B").

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ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before November 16, 1984.
2. Place order by March 31, 1985.

B. Shipping Dates

1. The complete set of K-3 material for the canyon melter, Item 1, is the first priority and must be shipped by November 15, 1985.
2. Carborundum shall quote the earliest shipping date for the spare melter refractory, Item 2, in weeks after completing the Item 1 set. The same gaging fixture will be used for both sets.

II. SHIPPING INSTRUCTIONS

- (C) All items supplied by the vendor on this order to be shipped to:

Toledo Engineering Co., Inc.
3400 West Central Ave.
Sylvania, OH 43560

Container should be marked:

ATTN: Dan Partin
For use on Du Pont Order AXC-6854W

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I. IDENTIFICATION

<u>Item No</u>	<u>EN Number</u>	<u>Description</u>
1	S350-185-12-10	K-3 Monofrax Refractory-Canyon Melter
2	S999-350-12-10	K-3 Monofrax Refractory-Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, tolerances, surface appearance, inspection, and shipping K-3 refractory. This material will be the glass contacting surface, in two melter vessels, for the Defense Waste Processing Facility.

B. Items By Vendor

Carborundum shall be responsible for the following:

1. Casting all blocks, Paragraph IV, Items 1 through 4, to meet the requirements in Paragraphs V.B. and C.
2. Furnishing grinding fixtures and associated templates for sidewall blocks, per Paragraph IV.E.
3. Machining center blocks per Paragraphs V.D.1.b. and c.
4. Machining bottom blocks per Paragraphs V.D.2.c. and d.
5. Machining corner and sidewall blocks per Paragraphs V.D.3.b. through h.
6. Machining riser blocks per Paragraphs V.D.4.b, f, and g.
7. Assembling, fitting, and match marking all blocks with the Du Pont furnished fixture per Paragraphs V.E. and VI.
8. Preparations for shipping per Paragraph VII.
9. Quality Assurance documents per Paragraph IX.

N = New
1/7528w/c1a

C = Changed

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C. Items Furnished By Others

1. Du Pont shall furnish a gaging fixture per W-741477 for fit-up, assembly, and matchmarking all K-3 blocks. This fixture is machined to the dimensions and contours of the interface between the K-3 and other refractory and insulation.
2. The following blocks shall be machined to their final dimensions by others:
 - a. Bottom Center Blocks A and T per Paragraph V.D.1.d.
 - b. Throat Block F per Paragraphs V.D.3.j. and k.
 - c. Sidewall Blocks G and L per Paragraphs V.D.3.j. and k.
 - d. Riser Blocks V₁, V₂, and U per Paragraph V.D.4.c.
3. Rock of Ages Corporation shall wire cut and grind the following blocks to their final dimensions.
 - a. Outside diameter of Throat Block F per Paragraph V.D.3.i.
 - b. Contoured end face of Riser Block V₁ per Paragraph V.D.4.d.
4. Didier Taylor Refractories Corporation shall furnish the sub-base refractory for the melter bottom. The K-3 gaging fixture, Paragraph II.C.1., shall be machined to the upper face contour of the assembled Zirmul blocks.
5. The superstructure refractory for the upper sidewall and top head shall be furnished by others.
6. Toledo Engineering Company shall assemble all insulation and refractory in the melter shell.

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

6 of 9

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III. REFERENCE DOCUMENTS

A. Drawings For Fabrication

<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
D-185718	3	K-3 Details - Sheet 1
D-185719	1	K-3 Details - Sheet 2
D-185720	3	K-3 Details - Sheet 3

B. Drawings for Final Fit-Up

<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
44993-11	2	Refractory Gaging Fixture K-3
W-742149-A	3	Trammel Assembly
44993-29	1	Locating Template
44993-12	2	Gaging Fixture Base-K-3
44993-13	3	Template Supports, Jig & Removable Segment
44993-14	1	K-3 Riser Gage & Insert
44993-15	1	K-3 Riser Support
D-183699	15	
D-186811	3	Fixture Details - Sheet 4

C. Drawings For Information

The following drawings are submitted for information only:

<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
PV-184722	9	Shell Assembly - DWPF Melter
W-732366	22	DWPF Melter Section
D-186204	22	Top Head Details - Sheet 1

N = New
 1/7528w/cia
 C = Changed

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<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
D-185972	13	Melter Shell - Sheet 2
W-737245	0	Refractory Layout Dimension Documentation - Sheet 1
W-736916	0	Refractory Layout Dimension Documentation - Sheet 2
W-737669	0	Refractory Assembly - Sheet 1
W-736915	0	Refractory Assembly - Sheet 2
D-185717	0	Zirmul Details
D-185715	2	Fiberfrax Details - Sheet 1
D-185716	7	Fiberfrax Details - Sheet 2
D-185713	0	Superstructure Refractory Details - Sheet 1
D-185714	0	Superstructure Refractory Details - Sheet 2
D-185743	0	Superstructure Refractory Details - Sheet 3

IV. CONFIGURATION AND QUANTITIES

Carborundum shall furnish two complete sets of shell and riser refractory, plus extra and test blocks, per Paragraphs IV.A. through D.

A. Item 1 - EN S350-185-12-10 - Canyon Melter Refractory

1. One set of shell refractory per D-185718, Rev 0, consisting of the following. See paragraphs V.D.1. through V.D.3. for machining requirements.

<u>Block</u>	<u>Qty</u>
--------------	------------

A	1
---	---

B	8
---	---

N = New
1/7528w/c1a

C = Changed

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<u>Block</u>	<u>Qty</u>
C	16
D	16
E	12
F	1
G	2
H	4
J	12
K	4
L	2
M	1
T	1

2. One set of riser refractory per D-185719, Rev 0, consisting of the following. See Paragraph V.D.4. for machining requirements.

<u>Block</u>	<u>Qty</u>
V ₁	1
V ₂	1
U	1

B. Item 2 - EN S999-350-12-10 - Spare Melter Refractory

1. One set of shell refractory per previous Paragraph IV.A.1.
2. One set of riser refractory per previous Paragraph IV.A.2.

N = New
 1/7528w/c1a

C = Changed

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C. Item 3 - Extra Cast Blocks

The following extra blocks shall be cast with the Item 1 set. These quantities are in addition to those required for Items 1 and 2, and will provide back-up material for contingencies.

<u>Drawing</u>	<u>Blocks</u>	<u>Qty</u>
D-185718	A, T	1 ea
D-185718	B, C, D, H, K, J	2 Ea
D-185718	F	3
D-185718	G	4 (see Paragraphs V.D.3.b.2 and V.D.3.m)
D-185718	L	4 (see Paragraphs V.D.3.b.2 and V.D.3.m))
D-185719	U	4

D. Item 4 - Test Blocks

Carborundum shall cast one test block from each batch (pour) for physical and chemical tests. One-half of each test block will be furnished to Du Pont. The other half will be retained by Carborundum. Carborundum shall run the chemical analysis on these blocks for Du Pont approval per Paragraph VIII.B.

E. Item 5 - Grinding Fixtures

Carborundum shall furnish grinding fixtures and associated templates for sidewall blocks E, F, G, H, J, K, L, and M. These fixtures shall position the blocks in the blanchard grinder to ensure that:

1. Vertical joint surfaces are perpendicular to the horizontal surfaces.
2. Vertical surfaces are ground to the correct angle.

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3. The inside flat surface formed by blocks G, H, L, and K is flat within allowable limits and perpendicular to the horizontal surfaces.

V. REFRACTORY REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

The melter vessel, Drawing PV-184722, consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment.

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

Drawings D-185972 and D-186204 shows details of the shell and top head configurations, including final dimensions and tolerances of the machined surfaces.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

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B. Critical Tolerances and Quality

The refractory for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters:

1. Long-Term Reliability

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing refractory. If the refractory fails, the entire melter must be removed from service.

2. Glass Containment

The conducting glass must not migrate through the refractory to the vessel wall, as this would short out the electrode power supply. To prevent glass penetration, refractory blocks must fit precisely with each other, and all gaps at refractory joints must be held to an absolute minimum.

C. Material

1. General

All material furnished on this order shall be Monofrax K-3 fused cast refractory, using the Epic-3 casting technique, and shall meet the following requirements:

- a. Configuration and quantities per Paragraph IV.
- b. Chemical and physical properties per Paragraph V.C.2.
- c. Surface appearance per Paragraph V.C.3.
- d. Machined surfaces per Paragraph V.D. As noted, Carborundum shall blanchard grind all flat surfaces.
- e. Assembled tolerances per Paragraph V.E.

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2. Properties

- a. Chemical Composition shall meet the following weight percentage values:

Aluminum Oxide (Al_2O_3):	55.0 minimum
Chromium Oxide (Cr_2O_3):	25.0 minimum
Magnesium Oxide (MgO):	4.9 minimum
Silicon Dioxide (SiO_2):	3.2 maximum
Ferric Oxide (Fe_2O_3):	7.4 maximum
Sodium Oxide (Na_2O):	0.4 maximum

- b. Bulk Density shall be 229 pounds per cubic foot minimum for blocks greater than 400 pounds, and 222 pounds per cubic foot minimum for blocks less than 400 pounds.

3. Surface Appearance

The following tolerances for acceptable surface appearance are the maximum allowable. Carborundum shall make every effort to manufacture blocks as near to perfection as possible.

- a. Voids - Maximum depth of casting scars shall be one inch as determined by inserting a 1/4 inch diameter probe into the scar perpendicular to the sawed surface.
- b. Area of coarse crystallinity shall not exceed 25% of the sawed surface.
- c. One show-through annealing crack not exceeding 1/32 inch width shall be permitted. The length of this crack may not exceed 90% of any two opposite faces and may not run more than 75% along an adjacent face.
- d. One hot tear up to 3/32 inch is permitted provided it does not exceed 30% of the block contact face or 50% of an as-cast face.

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- e. Corner spalls 1-1/2 x 1-1/2 x 1-1/2 inches are permitted on the rear corners of the blocks (four). Corner spalls on glass contact surfaces shall not penetrate more than 1/2 inch from the glass contact face, thus spalls 1-1/2 x 1-1/2 x 1/2 inch shall be permitted on glass contact corners (two only). All corner spalls are to be measured where edge spalls exceed 1/4 inch.
- f. All casting vugs shall be filled completely with Monofrax "K" air set cement.

D. Machined Surfaces

1. Center Blocks A and T

- a. Both A and T blocks shall be Epic-3 cast as 16.62 inch diameter cylinders, per Note 7 Drawing D-185720, with an allowance for machining to the final length.
- b. Center Block T shall be blanchard ground on both horizontal surfaces. After grinding, these surfaces shall be flat and parallel within .010 inches total.
- c. Center Block A shall be blanchard ground as follows:
 - 1) Select the best end for glass contact, and grind this surface flat within .010 inches. Identify this surface "Top".
 - 2) Blanchard grind bottom surface flat and parallel to top surface within .010 inches total.
- d. After blanchard grinding, both center blocks shall be shipped to Hardface Welding and Machining Co. for boring and taper grinding.
- e. The completed center blocks shall be returned to Carborundum, installed in the gaging fixture, and checked for fit.

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2. Bottom Blocks B and C

- a. All blocks shall be Epic-3 castings.
- b. The top (glass contact) surface, and all circumferential surfaces, shall remain in the as-cast condition.
- c. Bottom surfaces shall be machined flat, forming a chordal surface on the 16' 4-1/4 inch spherical radius.
- d. Vertical radial surfaces shall be blanchard ground flat within .010 inches total.
- e. As each block is completed, it shall be installed in the gaging fixture and checked for fit.

3. Corner Blocks D and Sidewall Blocks E, F, G, H, J, K, L, and M

- a. All blocks shall be Epic-3 castings.
- b. Both horizontal surfaces of all blocks shall be blanchard ground, by ring, per the following procedure:
 - 1) Individual blocks, or groups of blocks in a ring, may be ground separately, provided that the requirements for height, flatness and parallelism are met.
 - 2) G and H blocks shall be ground with the E blocks. K and L blocks shall be ground with the J blocks. An additional matched set of G and L blocks (two each) shall be included.
 - 3) After grinding, the horizontal faces shall be flat and parallel within .010 inches, and the same height within .010 inches.
- c. Vertical radial surfaces of all blocks shall be blanchard ground flat within .010 inches total. Sidewall blocks shall be ground using the fixtures described in Paragraph II.B.2.

N = New
1/7528w/c1a

C = Changed

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- d. Throat Block F shall be cast with a 1-1/2 inch machining allowance on the outside radius.
- e. The outside circumferential (block to shell) surfaces on all blocks except F shall be rough finished to provide maximum deviations of 1/16 inch above or below the plane of the as-cast surface.
- f. The outside circumferential (block to shell) surfaces on corner blocks D may be machined as a series of chords, if necessary. A minimum of five equal chords shall be machined on each block.
- g. Glass contact surfaces on Blocks E, J, F, and M shall be rough ground to remove protrusions in excess of 1/4 inch above the plane of the as-cast surface.
- h. Glass contact surfaces on Blocks G, H, K, and L shall be blanchard ground such that the assembled blocks form a surface that is flat within 1/16 inch.
- i. After all bottom and corner blocks are installed in the fixture and match marked, the F block shall be marked with a 48 inch radius arc, and shipped to Rock of Ages for wire cutting. The wire cut F block shall be returned to Carborundum, and assembled with the remaining sidewall blocks.
- j. Carborundum shall locate and mark the following:
 - 1) The 11-1/4 inch diameter hole in the F block, using the drilled V₁ block (Paragraph V.D.4.) as a template.
 - 2) The 4-1/4 inch diameter holes in one set of the G and L blocks, using the gaging fixture template.
- k. The marked F, G and L blocks shall be shipped to Hardface Welding and Machine Co. for boring.
- l. The bored F, G, and L blocks shall be returned to Carborundum for final fit-up and match marking per Paragraphs V.E. and VI.

N = New
1/7528w/c1a

C = Changed

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- m. The matched second set of G and L blocks shall be fit up and match marked. These blocks will remain solid - do not bore the 4-1/2 inch holes. This set will be a backup at final assembly.

4. Riser Blocks V₁, V₂, and U

- a. All blocks shall be Epic-3 cast as solid cylinders, with allowances for machining to the finished dimensions per Drawing D-185719.
- b. V₁ block, D-185719 shall be shipped to Hardface Welding and Machine Company for grinding the outside diameter sufficiently to meet drawing specifications. Hardface Welding shall also drill 11.25" thru hole 28" long.

Block will be O.D. ground on caps which will result in a step being left on both ends approximately 1-1/2" long at a diameter equal to as-cast diameter. HFW will return block to Rock of Ages for wire cutting 48" radius contour.
- c. V₂ block, D-185719, same as V₁ block except V₂ block to be shipped to Carborundum Company for cutting to length (steps will be removed at this time) and ends finished to drawing.
- d. The wire-cut V₁ block shall be returned to Carborundum for fitup and match-marking per Paragraph V.D.3.j.
- e. U block, D-185719, Hardface Welding will drill 11.25" diameter thru hole. They will grind outside diameter for sufficient length to meet drawing requirements. Grinding will result in steps on both ends.
- f. U block will be returned to Carborundum for cutting both ends, length to be specified by HFW. One end to be ground square by Carborundum to provide reference point to drill 12.5" diameter side hole.
- g. U block is returned to HFW for drilling 12.5" diameter side hole.

N = New
1/7528w/c1a

C = Changed

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- h. U block returned to Carborundum for cutting 25°'-30°' angle and final machining to length per drawing.
- i. U block returned to HFW for hand grinding of intersecting hole.
- j. U block returned to Carborundum for final fit and grind to length with Blocks V₁ and V₂ and align the 12-1/2" diameter hole with gaging fixture, Drawing W-741477.

E. Assembled Tolerances

The following tolerances are the maximum allowable after the K-3 blocks are assembled in the gaging fixture. Carborundum shall make every effort to manufacture blocks to achieve the best possible fit.

1. Overall Dimensional Tolerances

- a. Outside diameter of the assembled sidewall rings shall be 96.0 inches maximum and 95-3/4 inches minimum, exclusive of as-cast variations permitted in this specification.
- b. Outside diameter of the assembled bottom head and corner block refractory shall be 96.0 inches maximum and 95-3/4 inches minimum, exclusive of as-cast variations permitted in this specification.
- c. Out-of-roundness of the first course of the assembled corner ring (Blocks D, D₁, and D₂) shall be measured using fixture W-741477, with the side of the trammel arm pin set at a 48.0 inch radius. The full height of this ring shall be checked for concentricity and compliance with the diameter tolerance specified in V.E.1.b. Second and third courses of K-3 shall be checked in like manner.

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d. Bottom surface contour shall meet the following requirements with the blocks assembled in the fixture:

- 1) Void space between bottom surface of the B-ring and C-ring blocks, and the fixture surface, shall not exceed $3/16$ inch at any visible edge (no rocking). This requirement must be satisfied over the entire spherical radius zone.
- 2) Width of joint between the following blocks and fixture surface shall not exceed $1/32$ inch:
 - a) Center Block T
 - b) All O-ring blocks, including D_1 and D_2

Above surfaces are blanchard ground per Paragraphs V.D.1.b. and V.D.3.b.

e. Alignment of the riser centerline to the throat Block F riser hole centerline shall be $\pm 1/16$ inch. Width of joint between throat Block F and riser block V_1 shall not exceed $1/32$ inch at any point.

f. The inside flat surfaces, formed by assembled blocks G, H, K, and L shall be parallel to each other within $3/32$ inch total.

2. Joint Tolerances

- a. Width of as-cast block to block circumferential joints on the following blocks shall not exceed $3/16$ inch:
- 1) Center block A to B ring.
 - 2) B ring to C ring.
 - 3) C ring to D ring.

N = New
1/7528w/c1a

C = Changed

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- b. Width of all blanchard ground joints shall not exceed 1/16 inch. These include:
 - 1) Vertical radial joints on bottom blocks, corner blocks, and sidewall blocks.
 - 2) Horizontal surfaces on center Blocks A and T, corner blocks, and sidewall blocks.
 - 3) Mating joints on riser blocks

VI. MATCH MARKING

- A. Carborundum shall match mark the assembled K-3 blocks such that they can be reassembled in the melter shell, at a later date, in the exact location and orientation.
- B. Match marking shall be done after Du Pont approval of the assembly per Paragraph VIII.8.3., and shall be witnessed by Du Pont and the installation vendor.

VII. PREPARATIONS FOR SHIPPING

The vendor shall package the refractory, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall include:

- A. Sturdy wood crates.
- B. Additional protection for corners and machined surfaces.
- C. Use of pallets to permit loading and unloading with a forklift truck.
- D. Provisions to minimize stresses on packed refractory.
- E. Use of an exclusive truck with weather protection for shipment.

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VIII. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.
2. See Paragraph IX. for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspection

- a. Verify that chemical and physical properties are within the specified tolerances per Paragraph V.C.2. The chemical analysis shall be established with the test blocks, Paragraph IV.D. Bulk density shall be determined for each melter block.
- b. Inspect and approve blocks for conformance to the following:
 - 1) Surface appearance per Paragraph V.C.3.
 - 2) Drawing dimensions per Paragraph IV.A.
- c. Du Pont approval of the blocks, per preceding Paragraphs a and b, is required before the blocks are machined or installed in the gaging fixture.

2. Intermediate Inspections

Witness and approve fit-up of the blocks in the gaging fixture. This step includes checking and approving the following:

- a. Machined surfaces per Paragraph V.D.
- b. Assembled tolerances, per Paragraph V.E.

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3. Final Inspection

- a. Final inspection will be a joint inspection including representatives of the Engineering and Industrial Departments.
- b. Following approval of the assembly, the Du Pont QAFR shall check and approve match marking per Paragraph VI, with a representative from The Toledo Engineering Company.

IX. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following:
 1. Chemical analysis of each batch (pour) using the test blocks, Paragraph IV.D.
 2. Bulk density of each block.
- C. Each certification page shall include the following information:

K-3 Monofrax Refractory
Project 9S1780
Du Pont Order #AXC-6846-W
EN S350-185-10-1 (For Item 1 Blocks)
EN S999-350-10-1 (For Item 2 Blocks)
- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.
- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VIII.B.1.a., to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann

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F. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

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3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

N = New
1/7528w/c1a

C = Changed

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SF00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL: 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
2	12	87

ORDER NO.
Ait 5
AXC 6847W

VC: 09205

TO

Harbison Walker Refractories
Div. of Dresser Industries, Inc.
P. O. Box 336
Teaneck, NJ 07666FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.DD-8-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 1)

8-1-1 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

A ☒B ☐

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
		MODIFY ORDER IN PART, AS PER THE "LATEST" REVISED SPECIFICATION (SEE SUMMARY OF CHANGES - PAGE "AA").	
		ADDED SHIPPING INSTRUCTIONS FOR THE FIT-UP FIXTURE, AND MORTAR.	
1	S350-185-12-30	Refractory-Super- structure Canyon Melter	
1	S999-350-12-30	Refractory-Super- structure Spare Melter	
		Per Spec. 3-6847 Rev. 4 dated 01/16/87 attached and made part of this order.	
		TECHNICAL CONTACT: J.D. Gutmann 302-366-3929	
		ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.	
		<i>Original Price 95,609.31</i> <i>Call 5 Discount 1,144.00</i> <i>New Total Price 96,147.11</i>	

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-6847-W A5

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXPOMSTXGX Wilm, DE

ORIGINATOR

1-0-0-0

BUYER

AMOUNT

\$.00

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
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SPEC: 3-6847
REV: 4
DATE: January 16, 1987
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DEFENSE WASTE PROCESSING FACILITY

PROCUREMENT SPECIFICATION FOR SUPERSTRUCTURE REFRACTORY

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SUMMARY OF CHANGES PER REVISION #1

<u>Page</u>	<u>Paragraph</u>	<u>Change</u>
3	III.B.	Drawings JN-D68878, SHT. 1 & JN-D68878, SHT. 2 added.

SUMMARY OF CHANGE PER REVISION #2

<u>Page</u>	<u>Paragraph</u>	<u>Change</u>
8		Added Shipping Instructions

SUMMARY OF CHANGES PER REVISION #3

<u>Page</u>	<u>Paragraph</u>	<u>Change</u>
2	III.A	Substituted Harbison Walker drawings in place of Du Pont drawings.
2	III.B	Added Du Pont refractory drawings.
3	IV.A.2	Added "mixer load" after batch.
3-5	IV.B	Substituted H-W shapes for Du Pont block numbers.
5	IV.D	Substituted H-W shapes for Du Pont block numbers, and revised quantities.
6	IV.E	Added "mixer load" after batch.
10	VII.A	Added wood crate description.

(N)

SUMMARY OF CHANGES PER REVISION #4

<u>Page</u>	<u>Paragraph</u>	<u>Change</u>
8	I.B.	Added shipping instructions for the fixture and mortar.
1	IV.B.7.	Added mortar
3	IV.A.1.	Added mortar
6	IV.F.	Added mortar

SPECIFICATION

PLANT: SAVANNAH RIVER
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ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before November 14, 1984.
2. Place order by January 15, 1985.
3. Release fabrication by April 15, 1985 based on approval of vendor's drawings.

B. Shipping Dates

1. The complete set of top head and sidewall refractory for the canyon melter is the first priority and must be shipped by November 15, 1985. This shipment includes Item 1, Paragraph IV.B., and the extra blocks, Item 3, Paragraph IV.D.
2. The vendor shall quote the earliest shipping date for the spare melter refractory, Item 2, in weeks after shipping the Item 1 and Item 3 sets.
3. Ship the refractory fit-up fixture and mortar on or before February 2, 1987.

(N)

II. VENDOR DRAWINGS

The vendor shall quote the schedule for submitting Design Approval and Final Drawings per Para X.A.

III. SHIPPING INSTRUCTIONS

Ship To:

Toledo Engineering Co., Inc.
8400 West Central Ave.
Sylvania, OH 43560
Attn: Mr. Dan Partin
Marked "For Use On Du Pont Order No. AXC-6854-W"

SPECIFICATION

PLANT: SAVANNAH RIVER
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I. IDENTIFICATION

<u>Item No.</u>	<u>Engg. Nos. (EN)</u>	<u>Description</u>
1	S350-185-12-30	Superstructure Refractory-Canyon Melter
2	S999-350-12-30	Superstructure Refractory-Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, tolerances, surface appearance, inspection, and shipping superstructure refractory. This material will be the vapor space lining, in two glass melter vessels, for the Defense Waste Processing Facility.

B. Items by Vendor

The vendor shall be responsible for the following:

1. Casting and firing all blocks to meet the requirements in Paragraphs IV and V. This includes constructing all models and molds.
2. Assembling, fitting, and match marking top head blocks with the Du Pont furnished fixture per Paragraphs V.D.1. and VI.
3. Assembling and fitting sidewall blocks per Paragraph V.D.2.
4. Preparations for shipping per Paragraph VII.
5. Quality Assurance documents per Paragraph IX.
6. Drawings per Paragraph X.
7. Mortar per Paragraph IV.

(N)

C. Items by Others

1. Du Pont shall furnish a gaging fixture for fit-up and assembly of the top head blocks.

N = New
8283w/clb C = Changed

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2. All other refractory and insulation shown on Drawings W-737669 and W-736915 will be furnished by others.
3. Toledo Engineering Company shall assemble all insulation and refractory in the melter shell and top head.

III. REFERENCE DOCUMENTS

A. Drawings for Fabrication

<u>Dwg No.</u>	<u>Rev</u>	<u>Description</u>
A-247328L	1	Lining for DWPF Melter
A-247329L	1	Dome Shapes for DWPF Melter
A-247330L	1	Dome Shapes for DWPF Melter
A-247331L	1	Sidewall Shapes for DWPF Melter
A-247328E Sh. 1	0	B/M for DWPF Melter Dome
A-247328E Sh. 2	0	B/M for DWPF Melter Sidewall

B. Drawings For Information

The following drawings are submitted for information only:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>
D-185713	0	Superstructure Refractory Details - Sheet 1
D-185714	0	Superstructure Refractory Details - Sheet 2
D-185743	0	Superstructure Refractory Details - Sheet 3
PV-184722	0	Shell Assembly - DWPF Melter
W-732366	6	DWPF Melter Section
D-186204	0	Top Head Details - Sheet 1

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<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>
D-185972	0	Melter Shell - Sheet 2
W-737245	0	Refractory Layout Dimension Documentation - Sheet 1
W-736916	0	Refractory Layout Dimension Documentation - Sheet 2
W-737669	0	Refractory Assembly - Sheet 1
W-736915	0	Refractory Assembly - Sheet 2
D-185716	0	Fiberfrax Details - Sheet 2
D-185718	0	K-3 Details - Sheet 1
JN-D68878 Sht. 1	1	Orientation & Elevation for Refractory Fixture
JN-D68878 Sht. 2	1	Misc. Details for Refractory Fixture

IV. CONFIGURATION AND QUANTITIES

A. General

- (C)
1. The vendor shall furnish two complete sets of top head and sidewall refractory, plus extra blocks and material samples and mortar, per Paragraphs IV.B. through IV.F.
 2. The vendor shall provide a procedure to identify the batch (mixer load) material samples, and each block, by batch number.

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B. Item 1 - EN S350-185-12-30 - Canyon Melter Refractory

One set of top head and sidewall refractory per A-247328L, Rev 5/2/85; A-247329L, Rev 5/6/85; A247330L, Rev 5/6/85; A247331L, Rev 5/2/85 A247328-E, Sh 1, Rev 0, and A247328-E Sh 2, Rev 0 consisting of the following:

1. Top Head Refractory

<u>H-W Shape</u>	<u>Qty</u>
E1D-539-A	1
E1D-539-B	16
E1D-539-C	14
E1D-539-DL	2
E1D-539-DR	2
E1D-539-E	40
E1D-539-F	8
E1D-539-G	4
E1D-539-HL	3
E1D-539-HR	3
E1D-539-JL	2
E1D-539-JR	2
E1D-539-KL	2
E1D-539-KR	2
E1D-539-L	6
E1D-539-M	2
E1D-539-N	72

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2. Side Wall Refractory

<u>H-W Shape</u>	<u>Qty</u>
E1D-539-P	80
E1D-539-R	50
E1D-539-S	100
E1D-539-T	50
E1D-539-WL	2
E1D-539-WR	2
E1D-539-XL	2
E1D-539-XR	2

Per Notes 1 & 2, Drawing D-185714, blocks 20, 25, 26, 27, and 28 will be cut to final height at assembly with the melter shell.

C. Item 2 - EN S999-350-12-30 - Spare Melter Refractory

One set of top head and sidewall refractory per previous Paragraph IV.B.

D. Item 3 - Extra Blocks

The following extra blocks shall be furnished with the Item 1 set. These quantities are in addition to those required for Items 1 and 2, and will provide back-up material for contingencies, as well as material for physical property tests per Paragraph VIII.B.1.b.

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<u>H-W Shape</u>	<u>Qty</u>
E1D-539-A, DL, DR, G, HL, HR, JL, JR, KL, KR, M, WL, WR, XL, XR.	2 each
E1D-539-L, F	4 each
E1D-539-B, C	6 each
E1D-539-E, R, T	10 each
E1D-539-N, P, S	16 each

E. Item 4 - Batch Material

The vendor shall retain a sample of each batch (mixer load) and run the chemical analysis for Du Pont Approval per Paragraph VIII.B.1.a.

(N) F. Item 5 - Mortar

The vendor shall furnish 1600 pounds of Korundal Bond mortar-airset, packaged dry in 100 pound plastic pails.

V. REFRACTORY REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

The melter vessel, Drawing PV-184722, consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment.

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

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Drawings D-185972 and D-186204 show details of the shell and top head configurations, including final dimensions and tolerances of the machined surfaces.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

B. Critical Tolerances and Quality

The refractory for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters:

1. Long-Term Reliability

After the melting operation becomes radioactive, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing refractory. If the refractory fails, the entire melter must be removed from service.

2. Alignment with Nozzle Openings

Auxiliary equipment, mounted on the top head nozzles, must be installed and removed remotely using an overhead crane. To avoid interference, clearance holes in the top head refractory must be precisely aligned with the vessel nozzles:

- a. Outside diameters of refractory and nozzle holes must be concentric.
- b. Centerlines of refractory and nozzle holes must be aligned axially.

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C. Material

1. General

All refractory furnished on this order shall meet the following requirements:

- a. Configuration and quantities per Paragraph IV.
- b. Chemical and physical properties per Paragraph V.C.2.
- c. Surface appearance per Paragraph V.C.3.

2. Properties

- a. Chemical Composition shall meet the following weight percentage values:

Aluminum Oxide (Al_2O_3):	88.0 minimum
Silicon Dioxide (SiO_2):	11.0 maximum
Ferric Oxide (Fe_2O_3):	0.3 maximum
Alkali (Na_2O , K_2O , Li_2O):	0.35 maximum
Other	1.0 maximum

- b. Physical Properties shall meet the following requirements:

- 1) Cold Crushing Strength per ASTM C-133-72

- a) Brick 7500 psi
- b) Shapes 5000 psi

- 2) Apparent Porosity per ASTM C-20

- a) Brick - 20% maximum
- b) Shapes - 25% maximum

- 3) Bulk Density per ASTM C-134-70

- a) Brick - 175 pounds per cubic foot minimum
- b) Shapes - 165 pounds per cubic foot minimum

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3. Surface Appearance

All brick and shapes shall be free of voids, cracks, and laminations and shall have sharp, well bonded edges, corners, and outer surfaces.

D. Assembled Tolerances

1. Top Head Refractory

The following tolerances are the maximum allowable after the top head refractory, Paragraph IV.B.1, is assembled in the gaging fixture. The vendor shall make every effort to manufacture blocks to achieve the best possible fit.

a) Overall Dimensional Tolerances

- 1) Outside diameter of the assembled refractory, across block #16 ring, shall be 97-1/4 inches maximum and 96-7/8 inches minimum.
- 2) Void space between the top surface contour and the fixture surface shall not exceed 3/16 inch at any visible edge (no rocking). This requirement must be satisfied over the entire spherical radius zone.
- 3) Holes shall be within +1/16 inch of design location. Alignment of block holes to the nozzle openings are critical and must be maintained. See Paragraph V.B.2. for background.

b. Joint Tolerances

- 1) Maximum width of radial block to block joints shall be 1/16 inch.
- 2) Maximum width of circumferential block to block joints (between rings) shall be 1/8 inch to account for length tolerance only.
- 3) All joints shall be parallel, or tapered open toward the back side, within maximum limits defined in preceding Paragraphs 1 and 2.

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2. Sidewall Refractory

The following tolerances are maximum allowable after the sidewall refractory, Paragraph IV.B.2, is assembled on a surface that is flat over the 97 inch diameter.

a. Overall Dimensional Tolerances

- 1) Outside diameter of the assembled refractory, across all rings, shall be 97-1/4 inch maximum and 96-7/8 inch minimum.

b. Joint Tolerances

- 1) Maximum width of radial block to block joints, and horizontal joints between rings, shall be 1/16 inch.
- 2) All joints shall be parallel, or tapered open toward the back side (outside), within the 1/16 inch maximum limit.

VI. MATCH MARKING

- A. The vendor shall match mark the assembled top head refractory blocks, such that they can be reassembled in the melter top head, at a later date, in the exact location and orientation.
- B. Match marking shall be done after Du Pont approval of the assembly per Paragraph VIII.B.3, and shall be witnessed by Du Pont and the installation vendor.

VII. PREPARATIONS FOR SHIPPING

The vendor shall package the refractory, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall include:

- A. Wood crates constructed per Harbison-Walker standard skid No. C-5404 as shown on drawing SK 15169-M.
- B. Additional protection for corners and machined surfaces.
- C. Use of pallets to permit loading and unloading with a forklift truck.

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D. Provisions to minimize stresses on packed refractory.

E. Use of an exclusive truck with weather protection for shipment.

VIII. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.
2. See Paragraph IX. for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspections

- a. Verify that chemical properties of the batch material, Paragraph IV.E., meet the requirements in Paragraph V.C.2.a.
- b. Verify that physical properties of selected extra blocks, Paragraph IV.D, meet the requirements in Paragraph V.C.2.b.
- c. Inspect and approve blocks for conformance to the following:
 - 1) Surface appearance per Paragraph V.C.3.
 - 2) Drawing dimensions per Paragraph IV.B.
- d. Du Pont approval of the blocks, per preceding Paragraphs a through c, is required before the blocks are assembled for fit-up.

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2. Intermediate Inspections

- a. Witness and approve fit-up of top head blocks in the gaging fixture per Paragraph V.D.1.a. This includes checking and approving the following:
 - 1) Dimensional tolerances per V.D.1.a.1 and 2.
 - 2) Alignment of refractory to nozzle holes per Paragraph V.D.1.a.3.
 - 3) Joint tolerances, per Paragraph V.D.1.b.
- b. Witness and approve fit-up of sidewall blocks, per Paragraph V.D.2.a. This includes checking and approving the assembled tolerances per Paragraph V.D.2.b.

3. Final Inspection

- a. Final inspection will be a joint inspection including representatives of the Engineering and Industrial Departments.
- b. Following approval of the assembly, check and approve match marking per Paragraph VI, with a representative from The Toledo Engineering Company.
- c. Review and approve preparations for shipping per Paragraph VII.

IX. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following:
 1. Chemical analysis from the batch material, Paragraph VIII.B.1.a.

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2. Physical property data from extra blocks, Paragraph VIII.B.1.b:
 - a. Cold crushing strength
 - b. Apparent porosity
 - c. Bulk density
- C. Each certification page shall include the following information:

Superstructure Refractory
Project 9S1780
Du Pont Order #AXC-6847-W
EN S350-185-12-30 (For Item 1 Blocks)
EN S999-350-12-30 (For Item 2 Blocks)
- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.
- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VIII.B.1.a and b, to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J.D. Gutmann
- F. The remaining sets shall be sent at time of shipment as follows:
 1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 2. Two (2) sets, including signed inventory transmittal sheet, best way to:

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By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S.B. Hicks

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X. VENDOR DRAWINGS

The vendor shall submit one reproducible of each design approval drawing, and final drawing, per the following requirements.

A. Schedule

Your quotation must state your schedule for submitting drawings as follows:

1. Design Approval Drawings in weeks after receipt of order.
2. Final Drawings in weeks after return of all Design Approval Drawings.

B. Design Approval Drawings

1. These drawings must be submitted before Du Pont will release fabrication. One print of each drawing will be returned stamped "Approved" or "Approved As Noted". Fabrication release instructions will be included in the drawing transmittal letter.
2. The vendor shall revise all "Approved As Noted" drawings to reflect all changes. One reproducible of all "Approved" and "Approved As Noted" drawings shall be submitted as final drawings.

C. Final Drawings

These drawings are for Du Pont design and construction purposes.

D. The following information is required for approval:

Layout and orientation
Overall dimensions
Weight
Estimated volume

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E. All drawings, transmittal letters, and correspondence shall include the following information:

Plant	Savannah River
Project	9S1780
Du Pont Order No.	AXC-6847-W
EN Numbers	5350-185-12-30 5999-350-12-30
Vendor Shop Order No.	

N = New C = Changed
8283W/c1b

DUPONT

E. I. du Pont de Nemours & Co. (Inc.)

NO: 00-47

Order # 7081
Valley Forge Refractories Co., Inc.
Box 714
Valley Forge, PA 19461

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

MODIFY ORDER IN PART (SEE SUMMARY OF CHANGES,
PAGE #AA-1).

- 1 S350-185-12-20 Refractory - Zirmul
- 1 S999-350-12-20 Refractory - Zirmul

Per Spec. 3-6848 Rev. 5 dated 11/13/87
attached and made part of this order.

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price \$226,873.20
Alt 5 Increase \$ 35,681.40
New Total Firm Price \$262,554.60

Per vendor letter dated 12/16/87 by W.L. Tracey

MARK AND SHIP AS FOLLOWS
E. I. DU PONT DE NEMOURS & COMPANY

9S1780
3-6848

XXXXXXXXXXXX R.L. Donall

AXC-6848-W A5

XXXXXXXXXXXX Wilr, DE

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DEFENSE WASTE PROCESSING FACILITY

PROCUREMENT SPECIFICATION FOR ZIRMUL REFRACTORY

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SUMMARY OF CHANGES PER REVISION #1

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
2	III.A	Drawing D-185717 changed to Revision 1.
2	III.B	Drawings W-732366, D-185792, and D-185718 changed to revisions as shown.
12	IX.B.5	Weight and volume requirement added.

SUMMARY OF CHANGES PER REVISION #2

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
2	III.B	Drawings 44993-19 & 44993-20 changed to revisions as shown.
3	III.B	Drawing 44993-23 revised Drawing 44993-23A added new.

SUMMARY OF CHANGES PER REVISION #3

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
8		Added Shipping Instructions.

SUMMARY OF CHANGES PER REVISION #4

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
7	U.C.2.b	Changed requirements from all blocks to test blocks.
7	U.C.2.c	Changed requirements from all blocks to test blocks.

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SUMMARY OF CHANGES PER REVISION #4 (Cont'd)

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
12	IX.B.2	Changed requirements from all blocks to test blocks.
12	IX.B.3	Changed requirements from all blocks to test blocks.
12	IX.B.5	Changed requirements from all blocks to test blocks.

(N)

SUMMARY OF CHANGES PER REVISION #5

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
B		Revised Shipping Instructions.
1	II.B.2	Added nut
2	III.A.	Drawing D-185717 changed to Rev. 9. Added Detail D-186811-D.
9	V.E.1.C.(2)	Added 1/2" minimum grinding allowance.
10	VII.	Revised shipping preparations
12	VIII.B.4.	Added.

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ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before December 14, 1984.
2. Place order by March 29, 1985.

B. Shipping Dates

1. The Zirmul gaging fixture will be shipped to Didier Taylor on or before June 15, 1985.
2. The complete set of Zirmul material for the Canyon Melter, Item 1, is the first priority and must be shipped by September 4, 1985.
3. Didier Taylor shall quote the earliest shipping date for the spare melter refractory, Item 2, in weeks after completing the Item 1 set. The same gaging fixture will be used for both sets. Anticipated ship date of this fixture back to Didier Taylor is mid-April 1986.

II. SHIPPING INSTRUCTIONS

(C) All items supplied by the vendor on this order to be shipped via exclusive truck, prepaid to:

(C) Rock of Ages Corporation
Barre, VT 05641

Container should be marked:

(C) ATTN: Dennis Merchant
For use on Du Pont Order AXC-8976W

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I. IDENTIFICATION

<u>Item No.</u>	<u>Engg. Nos. (EN)</u>	<u>Description</u>
1	S350-185-12-20	Zirmul Refractory-Canyon Melter
2	S999-350-12-20	Zirmul Refractory-Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, tolerances, surface appearance, inspection, and shipping Zirmul refractory. This material will be the sub-base lining, in two melter vessels, for the Defense Waste Processing Facility.

B. Items By Vendor

Didier Taylor shall be responsible for the following:

1. Casting and firing all blocks, Paragraph IV, Items 1 through 3, to meet the requirements in Paragraphs U.B. and C.
- (C) 2. Furnishing nut per Paragraph III.A. and mortar per Paragraph IV, Item 4.
3. Machining flat surfaces per Paragraph U.D.1.
4. Assembling, fitting, and match marking all blocks with the Du Pont furnished fixture per Paragraphs U.E. and VI.
5. Preparations for shipping per Paragraph VII.
6. Quality Assurance documents per Paragraph IX.

C. Items Furnished By Others

1. Du Pont shall furnish a gaging fixture per W-741477 for fit-up, assembly, and match marking all Zirmul blocks. This fixture is machined to the dimensions and contours of the interface between the Zirmul and the Fiberfrax insulation.

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2. Rock of Ages shall grind the top surface of the Zirmul blocks to the final dimension.
3. Carborundum shall furnish the K-3 monofrax refractory for the melter bottom and sidewall.
4. The superstructure refractory for the upper sidewall and top head shall be furnished by others.
5. Toledo Engineering Company shall assemble all insulation and refractory in the melter shell.

III. REFERENCE DOCUMENTS

A. Drawings For Fabrication

	<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>
(C)	D-185717	9	Zirmul Details
(N)	CBI 44993-28	0	Nut

B. Drawings For Information

The following drawings are submitted for information only:

<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>
W-732366	19	DWPF Melter Section
D-185972	13	Melter Shell - Sheet 2
44993-18	0	Zirmul Fixture Assemblies
44993-19	2	Zirmul Fixture Assemblies
44993-20	1	Zirmul Fixture Assemblies
44993-21	1	Trammel Contour and Flatness Template Assemblies
44993-22	1	Template Support Arm Contour and Flatness Template
44993-23	5	Zirmul Fixture Base
44993-23A	0	Stiffeners for Zirmul Fixture Base

C = Change N = New D = Deleted
 8628w/clb

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<u>Dwg. No.</u>	<u>Rev</u>	<u>Description</u>
44993-24	2	Zirmul Fixture Dummy Block
44993-25	0	Zirmul and K3 Shaft Posts
44993-26	1	Zirmul and K3 Fixture Details
44993-27	0	Zirmul Fixture Clamp Plate

(D)

W-737245	0	Refractory Layout Dimension Documentation - Sheet 1
W-736916	0	Refractory Layout Dimension Documentation - Sheet 2
W-737669	0	Refractory Assembly - Sheet 1
W-736915	0	Refractory Assembly - Sheet 2
D-185718	3	K-3 Details - Sheet 1
D-185715	0	Fiberfrax Details - Sheet 1

IV. CONFIGURATION AND QUANTITIES

Didier Taylor shall furnish two complete sets of melter refractory plus extra blocks, per Paragraphs IV.A. through C.

A. Item 1 - EN S350-185-12-20 - Zirmul Refractory - Canyon Melter

One set of Zirmul refractory per Drawing D-185717, Rev 0, consisting of the following. Each block shall be marked with the batch number.

<u>Block</u>	<u>Qty</u>
X	4
Y	16
Z	24

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B. Item 2 - EN S999-350-12-20 - Zirmul Refractory - Spare Melter

One set of Zirmul refractory per previous Paragraph IV.A.
Each block shall be marked with the batch number.

C. Item 3 - Extra Cast Blocks

The following extra blocks shall provide material for physical and chemical tests, as well as back-up material for contingencies. These quantities are in addition to those required for Items 1 and 2. Each block shall be marked with the batch number.

1. A minimum of three blocks of each configuration shall be furnished with each set - i.e. 9 blocks with Item 1, and 9 blocks with Item 2.
2. For test purposes, there shall be at least one block of each batch used for the entire order.
3. These extra blocks shall be fired with the respective blocks from the same batch numbers.
4. One block from each batch shall be selected by Du Pont for tests. One half of each block shall be used by Didier Taylor for physical and chemical tests per Paragraph IX B. The other half shall be retained by Du Pont for independent tests.

D. Item 4 - Mortar

Provide a sufficient amount of Shamrock 391 chrome alumina mortar to bond the two sets of refractory, Items 1 and 2.

V. REFRACTORY REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

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2. Melter Configuration

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

Drawing D-185972 shows details of the shell configuration including final dimensions and tolerances of the machined surfaces.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

B. Critical Tolerances and Quality

The refractory for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters:

1. Long-Term Reliability

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing refractory. If the refractory fails, the entire melter must be removed from service.

2. Glass Containment

The conducting glass must not migrate through the refractory to the vessel wall, as this would short out the electrode power supply. To prevent glass penetration, refractory blocks must fit precisely with each other, and all gaps at refractory joints must be held to an absolute minimum.

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C. Material

1. General

a. Refractory

All material furnished on this order shall be Zirmul gel cast and fired refractory, and shall meet the following requirements:

- (1) Configuration and quantities per Paragraph IV.
- (2) Chemical and physical properties per Paragraph U.C.2.
- (3) Surface appearance per Paragraph U.C.3.
- (4) Assembled tolerances per Paragraph U.E.

b. Mortar

Mortar for Zirmul block to block joints shall be Shamrock 391 chrome alumina as manufactured by Didier Taylor Refractory Corporation, Cincinnati, Ohio.

2. Properties

a. Chemical Composition shall meet the following weight percentage values:

Aluminum Oxide (Al_2O_3):	69.0 $\pm$ 2.0
Zirconium Oxide (ZrO_2):	19.5 $\pm$ 2.0
Silicon Dioxide (SiO_2):	10.5 $\pm$ 2.0
Impurities:	1.0 maximum

b. Apparent porosity, as determined by ASTM test method C-20, shall not exceed 24% for any individual test block with an average porosity not to exceed 23% for all test blocks.

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- c. Bulk Density, as determined by ASTM C-20, shall not be less than 2.93 gm/cc for any individual test block and shall not average less than 2.95 gm/cc for all test blocks. Each test block shall be weighed to verify conformance to these requirements.
- d. Cold compressive strength shall be based on tests performed by Du Pont on Zirmul material supplied by Didier Taylor. A minimum compressive strength value shall be selected by mutual agreement, after both parties review the test results.

3. Surface Appearance

- a. Didier Taylor and Du Pont shall select sample blocks, which have surfaces that are considered mutually acceptable and attainable, to represent both as-cast and ground conditions. Photographs of these surfaces shall be prepared, by Du Pont, for use by Du Pont personnel when the refractory is inspected. Didier Taylor may meet these requirements by patching and re-burning.
 - (1) Maximum visible void size shall be 1/4 inch in diameter by 1/4 inch deep. There shall be no more than five such voids per square foot of surface.
 - (2) Other surface voids shall not exceed 1/8 inch in diameter by 1/8 inch deep, compose more than thirty percent of the surface, or exceed more than ten such voids for any square inch of surface.
 - (3) Surface checking of cast surfaces is acceptable. Checks shall not be more than 1/16 inch deep as measured by grinding and measuring with a depth gauge.
 - (4) Cracks which penetrate the surface, and can be traced more than one inch on two adjacent surfaces, shall be cause for rejection.
- b. Corner spalls shall not exceed 1/2 inch as measured along each edge. See Paragraph U.E.2.c for assembly requirements.

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 8

- c. Edge spalls shall not exceed 1/4 inch as measured normal to the edge, and shall not exceed twenty-five percent of any edge. See Paragraph U.E.2.c for assembly requirements.

D. Machined Surfaces

1. All block to block flat joints (vertical radial surfaces) in each ring shall be ground by Didier Taylor. Circumferential joints shall be "as cast".
2. The top surface of the Z-ring blocks will be ground per Paragraph U.E.1.c.(2).

E. Assembled Tolerances

The following tolerances are the maximum allowable after the Zirmul blocks are assembled in the gaging fixture. Didier Taylor shall make every effort to manufacture blocks to achieve the best possible fit.

1. Overall Dimensional Tolerances

- a. Outside diameter of the assembly shall be 95.0 inches maximum and 94-3/4 inches minimum.
- b. Bottom Surface Contour shall meet the following requirements with the blocks assembled in the fixture:
 - (1) Void space between bottom surface of the blocks and the fixture surface shall not exceed 1/16 inch at any visible edge. This requirement must be satisfied over the entire spherical radius zone.
 - (2) The gap between blocks and the fixture surface, at the inside corner radius, shall not exceed 1/8 inch.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 9

- c. Top Surface Contour shall meet the following requirements with the blocks assembled in the fixture:

(1) The top spherical surface of the assembled blocks shall be checked with the contour template assembly, Drawing W-742149-B, supported above the jig at the exact location of the Zirmul to K-3 interface. No portion of the Zirmul shall interfere with the traverse of the contour template (360°), and no surface shall be more than 1/16 inch below the edge of the template.

- (C) (2) Didier Taylor shall provide a 1/2" minimum machining allowance for Surface A in the as-cast block dimensions per D-185717. Surface A will be ground to the final elevation by Rock of Ages on a separate Du Pont order.

2. Joint Tolerances

- a. Maximum width of ground block to block joints in any ring shall not exceed 3/64 inch.
- b. Maximum width of block to block joints between the Y and Z Zirmul rings, and between the Zirmul ring and dummy K-3 center block, shall not exceed 1/16 inch.
- c. Blocks shall be oriented at assembly such that adjacent corners and edges do not have coincident spalls. See Paragraph V.C.3.b. and c. for spall requirements.

VI. MATCH MARKING

- A. Didier Taylor shall match mark the assembled Zirmul blocks such that they can be reassembled in the melter shell, at a later date, in the exact location and orientation.
- B. Match marking shall be done after Du Pont approval of the assembly per Paragraph VIII.B.3., and shall be witnessed by Du Pont and a representative from the Toledo Engineering Company.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 10

(C) VII. PREPARATIONS FOR SHIPPING

Didier Taylor shall package the refractory, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall be as follows:

- A. The refractory for the melter assembly, Items 1 and 2, shall be shipped to Rock of Ages in the fixture assembly as shown on CBI Drawing 44993-19 (BPF 215867, Sheet 20). This includes the following items:

<u>Description</u>	<u>CBI Dwg. No.</u>	<u>Du Pont Dwg.</u>
Clamp Plate	44993-27	D-186811-A
Nut	44993-28	D-186811-D
Spanner Wrench	44993-28	D-186811-B

- B. In addition, the following fixture parts shall be shipped with the assembly. These shall be packaged in sturdy wood crates. Machined surfaces shall be coated with a protective grease per Du Pont Specification L2A, Class IIIB, exterior surface grease.

<u>Description</u>	<u>CBI Dwg. No.</u>	<u>Du Pont Dwg.</u>
Trammel Assembly	44993-21	W-742149-A
Contour Template Assy	44993-21	W 742149-C

VIII. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 451-0200.
2. See Paragraph IX. for documentation requirements.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 11

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspection

- a. Verify that chemical and physical properties are within the specified tolerances per Paragraph U.C.2. These properties shall be established with selected extra blocks, Paragraph IV.C.
- b. Inspect and approve blocks for conformance to the following:
 - (1) Drawing dimensions per Paragraph IV.A.
 - (2) Surface appearance per Paragraph U.C.3.
- c. Du Pont approval of the blocks, per preceding Paragraphs a and b, is required before the blocks are machined or installed in the gaging fixture.

2. Intermediate Inspections

Witness and approve fit-up of the blocks in the gaging fixture. This step includes checking and approving the following:

- a. Machined surfaces per Paragraph U.D.
- b. Assembled tolerances, per Paragraph U.E.

3. Final Inspection

- a. Final inspection will be a joint inspection including representatives of the Engineering and Industrial Departments.
- b. Following approval of the assembly, the Du Pont QAFR shall check and approve match marking per Paragraph VI, with a representative from the Toledo Engineering Company.

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 12

- (N) 4. Approval of Shipping Preparations
- (N) a. The Du Pont QA/R shall witness and approve shipping preparations per Paragraphs VII.A. and B. This shall include verification of the following:
- (N) (1) Shipping fixture assembled per Paragraph VII.A.
- (N) (2) Machined surfaces of Trammel and Contour Template Assemblies are coated with protective grease per Paragraph VII.B.
- (N) (3) All components of the Trammel and Contour Template Assemblies have been crated per Paragraph VII.B.
- (N) (4) Shipment is via exclusive truck, prepaid, and identified per Paragraph II, Page B.

IX. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following:
1. Chemical analysis of each batch (pour) using the extra blocks, Paragraph IV.C.
 2. Apparent porosity of each test block.
 3. Bulk density of each test block.
 4. Cold compressive strength using selected extra blocks, Paragraph IV.C.
 5. Weight and volume of each test block.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 13

- C. Each certification page shall include the following information:

Zirmul Refractory
Project 9S1780
Du Pont Order #AXC-6848 -W
EN S350-185-20-1 (For Item 1 Blocks)
EN S999-350-20-1 (For Item 2 Blocks)

- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.

- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VIII.B.1.a., to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviere Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann

- F. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6848
REV: 5
DATE: November 11, 1987
PAGE: 14

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

(TWX: 810-771-2671)

TEL 803-725-8211

WU: AUGUSTA, GA)

VC: 07290

TO

(716) 875-3380

Hard Face Welding & Machinery
Corporation
196 Philadelphia Street
Buffalo, NY 14207

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
7	14	88

ORDER NO.

AXC Alt 6
6849W

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DD-E-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11)

E-1 / Q1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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REFRACTORY K3 GRINDING & DRILLING

THIS ALTERATION IS TO ADD:

1 5999-350-16 Block-Spare Riser

TECHNICAL CONTACT: J.D. Gutmann 302-366-3929

MACHINE ONE RISER BLOCK TO THE V2 CONFIGURATION PER
DU PONT DRAWING D-185719. THIS WILL BE A BACK-UP
FOR THE MELTER #2 K-3 RISER BLOCKS.

SHIPPING INSTRUCTIONS FOR THIS BLOCK WILL BE
FURNISHED LATER.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price \$185,000.30

Alt 6 Increase \$ 6,400.00 NTE

New Total Firm Price \$191,400.30 NTE

Per vendor quote #28768 dated 7/12/88 by John Cross

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-6849-W A6

EXECUTED BY

N. A. Cusick

ISSUING POINT

XXXXXXXXXX Wilm, DE

ORIGINATOR

BUYER

AMOUNT

\$.00

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABO
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SA.
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E.
DU PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SC
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

VC: 07290

(TWX: 810-771-2671)

TEL 803-725-6211

WU: AUGUSTA, GA)

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30913

DATE		
MO	DAY	YR
3	16	87

ORDER NO.	Alt 5
AXC6849W	

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

Hard Face Welding & Machinery
Corporation
196 Philadelphia Street
Buffalo, NY 14207

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
CERTAIN PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.DD-E-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 1)

B-1-1 (2) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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REFRACTORY-K3 GRINDING & DRILLING

ADD TO ORDER:

VENDOR TO PROVIDE A FIXTURE & TOOLING TO GRIND THE
EXISTING V1 BLOCK CONTOUR TO IMPROVE FIT-UP, WITH THE
F BLOCK AS PER DU PONT DETAIL DRAWING D-185719,
REV. #2.

LABOR/MATERIAL FOR MANUFACTURE OF TOOLING FIXTURE &
COST OF LABOR FOR GRINDING OF V1 BLOCK ANGLE/RADII
SURFACE TO IMPROVE CONTACT SURFACE WITH F BLOCK (SEE
BELOW).

NOTE: TOOLING COMPLETE INCLUDING DIAMOND WHEEL.
DOES NOT INCLUDE GRINDER HEAD.

INCREASE PER THIS ALTERATION AMOUNTS TO \$17,140.00
(TOOLING) AND EST. \$6,000.00 (FOR GRINDING) OF V1
BLOCK AS PER VENDOR'S LETTER DATED 3/6/87.

Ship to:
Per Original Specification

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

See Body

EXECUTED BY:

A. M. Lawrence

ORIGINATOR

J. V. Perkins

DEST

AXC-6849-W A5

ISSUING POINT

XXXLXXXCA Wilm, DE

BUYER

AMOUNT

\$1.00

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SALAMANCA RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
3	16	87

ORDER NO.	A15-5
AXC6849W	

VC: 07290

TO

Hard Face Welding & Machinery
Corporation
196 Philadelphia Street
Buffalo, NY 14207

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-12

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DD-8-11 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1)

E-11-31 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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TECHNICAL CONTACT: J.D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

PREVIOUS PRICE \$161,860.36
ALT 5 INCREASE NTE \$ 23,140.00
NEW TOTAL FIRM PRICE NTE \$185,000.30

* Grinding charges NTE \$6000000

Per vendor quote 12337A dated 3/6/87 by R.L. Kelley

SHEET ☐ FINAL ☐		PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY			9S1780 3-6849
ORDER NO.	See Body	EXECUTED BY	ORIGINATOR
DEST	AXC-6849-W A5	A. M. Lawrence	1-0-0-0
ITEM NO.	GENERAL LEDGER & COST CODE	ISSUING POINT	BUYER AMOUNT
		XXXXXXXXXXXX Wilm, DE	\$.00
		DIRECT ALL INQUIRIES TO THE ABOVE BUYER. PURCHASE EXEMPT FROM SOUTH CAROLINA AND USE TAXES PURSUANT TO EXECUTIVE CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION	
		APPROVED FOR DU PONT	

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SRO0001

VC: 07290

TO

Hard Face Welding
& Machine Company, Inc.
196 Philadelphia Street
Buffalo, NY 14207

SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913

(TWX: 810-771-2671)

TEL 803-725-8211

WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
11	19	85

ORDER NO.

Alt 2
AXC 6849W

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on CSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN

OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.

DD-E-1 (CERTIFIED FOR NATIONAL DEFENSE

USE UNDER DPM REGULATION 11

E-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

*SEE BODY

CASH TERMS

VIA

P.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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REFRACTORY - K-3 GRINDING AND DRILLING

Modify order in part, as per the "latest" revised
Specification. (See Summary of Changes, Page #AA).

Per Spec. 3-6849 Rev. 2 dated 09/26/85
attached and made part of this order.

Previous Price	\$159,627.00
Alt. 2 Increase	\$1,846.00
New Total Firm Price	\$161,473.00

Per Quote 27173 dated 11/5/85
by John Gross

TECHNICAL CONTACT: J.D. Gutmann 302-366-3929

* Revised Shipping Date per Revised Sch. A-1
dated 11/5/85.

This confirms letter order placed 10/3/85 & wire
dated 9/11/85 with Hardface Welding by L.J. Kana

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-6849-W A2

EXECUTED BY

L. J. Kana

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

1-0-0-

BUYER

AMOUNT

\$1,846.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

bah

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

VC: 07290

SABANNAH RIVER PLANT

P.O. BOX 117 (13) Augusta, GA. 30913

(TWX: 810-771-2671)

TEL 803-725-8211

WU: AUGUSTA, GA)

TO

Hard Face Welding
& Machine Company, Inc.
196 Philadelphia Street
Buffalo, NY 14207

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
11	19	85

ORDER NO.

A11-2

AXC 6849W

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

*SEE BODY

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.

DO-8-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11.

8-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11.

B ☐

CASH TERMS

VA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

3-6849

ORDER NO.

EXECUTED BY

L. J. Kane

ORIGINATOR

1-0-0-

DEST

AXC-6849-W A2

ISSUING POINT

XXXXXX Wilm, DE

BUYER

AMOUNT

\$1,846.00

ITEM NO.

GENERAL LEDGER & COST CODE

951780

ban

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PRICE PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR K-3 REFRACTORY GRINDING AND DRILLING

TABLE OF CONTENTS

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III. REFERENCE DRAWINGS	2
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V. REFRACTORY FABRICATION REQUIREMENTS	3
A. GLASS MELTER DESCRIPTION	3
B. CRITICAL TOLERANCES AND QUALITY	4
C. MATERIAL	5
D. SCHEDULE	5
E. MACHINING PROCEDURES	5
VI. PREPARATIONS FOR SHIPPING	9
VII. INSPECTION	10
VIII. QUALITY ASSURANCE DOCUMENTATION	11

E.I. DU PONT DE NEMOURS & CO., INC.
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: AA

SUMMARY OF CHANGES TO REV. 0 OF SPECIFICATION

Page

- 8 Items IIB & C - additional information for shipping identification given.
- 2 Item III - REFERENCE DRAWINGS
- A. Drawings for Fabrication
Revision level of drawings changed.
- B. Drawings for Information
Revision level of drawing changed.

SUMMARY OF CHANGES TO REV. 1 OF SPECIFICATION

Page

- 6 Item V.E.2. Machining Procedure changed.

C = Changed
1/03JLW/jel

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 8

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before April 19, 1985.
2. Place order by July 30, 1985.

B. Shipping Dates

1. The vendor shall quote the turnaround time required for each item, Paragraphs IV.A., IV.B., and V.E., in weeks after receipt of the item. See Paragraph V.D. for schedule information.

II. SHIPPING INSTRUCTIONS

- A. All items will be shipped from the Carborundum Monofrax plant in Falconer, N.Y. as described in Paragraph V.D.

- B. The vendor shall ship block V1, from items 2 and 6, to:

Rock of Ages Corp.
Barre, VT
Attn: Mr. Dennis Merchant

Mark: "For Use On Du Pont Order AXC-8976-W"

- C. The vendor shall ship all other blocks to:

The Carborundum Co.
Refractories Division
Monofrax Plant
Falconer, N.Y.
Attn: Mr. Steve Graham

Mark: "For Use on Du Pont Order AXC-6846-W"

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 1

I. IDENTIFICATION

<u>Engg. Nos. (EN)</u>	<u>Description</u>
S350-185-12-12	K-3 Refractory Grinding and Drilling - Canyon Melter
S999-350-12-12	K-3 Refractory Grinding and Drilling - Spare Melter

II. SCOPE

A. General

This specification covers requirements for grinding and drilling K-3 Monofrax refractory to specific dimensions and tolerances. This material will be the glass contacting surface, in two melter vessels, for the Defense Waste Processing Facility.

B. Items By Vendor

The vendor shall be responsible for the following:

1. Machining all blocks, Paragraphs IV.A. & B., to the final dimensions and tolerances specified in Paragraph V.E.
2. All tooling, including fixtures, diamond grinding wheels, and diamond core drills.
3. Providing a representative at the Carborundum plant in Falconer, N.Y. to witness marking of hole locations per Paragraphs V.E.3.b. and V.E.4.b.
4. Preparations for shipping per paragraph VI.
5. Quality Assurance Documentation per Paragraph VIII.

C. Items Furnished by Others

1. All blocks shall be furnished by the Carborundum Co. as described in Paragraph V.E.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 2

II. SCOPE (Cont'd)

2. After final machining has been completed by the vendor, Carborundum shall assemble the refractory blocks in the Du Pont furnished gaging fixture, Drawing W-741477, to check fit-up.
3. Toledo Engineering will install the refractory in the melter vessel.

III. REFERENCE DRAWINGS

A. Drawings for Fabrication

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
D-185718	3	K-3 Details - Sheet 1
D-185719	1	K-3 Details - Sheet 2
D-185720	3	K-3 Details - Sheet 3

B. Drawings for Information

The following drawings are submitted for information only.

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
W-732366	27	DWPF Melter Section
W-728051	15	Section View-Electrodes
W-741477	11	K-3 Refractory Gaging Fixture
W-736916	0	Refractory Layout Dimension Documentation - Sheet 2
W-736915	0	Refractory Assembly - Sheet 2

IV. CONFIGURATION & QUANTITIES

The vendor shall machine two sets of K-3 refractory blocks consisting of the following quantities. Fabrication procedures are covered in Paragraph V.E.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 3

IV. CONFIGURATION & QUANTITIES (Cont'd)

A. Canyon Melter Set - S350-185-12-12

<u>Item</u>	<u>Description</u>	<u>Drawing No.</u>	<u>Qty</u>
1	Bottom Center Blocks A & T	D-185718 View W	1 each
2	Riser Blocks V ₁ , V ₂ & U	D-185719	1 each
3	Throat Block F	D-185718	1
4	Sidewall Blocks L & G	D-185718	2 each
	Total Canyon Melter Blocks		10

B. Spare Melter Set - S999-350-12-12

<u>Item</u>	<u>Description</u>	<u>Drawing No.</u>	<u>Qty</u>
5	Bottom Center Blocks A & T	D-185718 View W	1 each
6	Riser Blocks V ₁ , V ₂ & U	D-185719	1 each
7	Throat Block F	D-185718	1
8	Sidewall Blocks L & G	D-185718	2 each
	Total Spare Melter Blocks		10

V. REFRACTORY FABRICATION REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 4

V. REFRACTORY REQUIREMENTS (Cont'd)

2. Melter Configuration

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

B. Critical Tolerances and Quality

The refractory for this application must be machined to exacting dimensions and tolerances, and must be treated with exceptional care to prevent the formation of chips, cracks and other defects. These requirements are dictated by unique operating conditions of DWPF melters:

1. Long-Term Reliability

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing refractory. If the refractory fails, the entire melter must be removed from service.

2. Glass Containment

The conducting glass must not migrate through the refractory to the vessel wall, as this would short out the electrode power supply. To prevent glass penetration, gaps between refractory clearance holes and installed equipment must be held to a minimum. This requires tight tolerances on the size and location of the clearance holes.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
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V. REFRACTORY REQUIREMENTS (Cont'd)

C. Material

1. All material furnished to the vendor for machining shall be Monofrax K-3 fused cast refractory.
2. K-3 is an extremely hard chrome alumina material (9+ on the Moh scale) which must be machined with diamond tooling. It is also subject to cracking or breaking under shock loads, and must be handled and machined with exceptional care. See Paragraph V.B. for background.
3. Samples of K-3 are available from Du Pont for vendor tests and machining trials.

D. Schedule

1. Blocks will be shipped to the vendor, in distinct groups, over a period of several months. These groups are identified by item number in Paragraphs IV.A. & B., and V.E. The sequence for shipping blocks, and order of priority for machining, is the same as the item number.

This timing is dictated by the manufacturing sequence at Carborundum to cast, grind, and fit-up blocks in a particular order. In addition, one complete set of blocks must be machined and fit-up for the Canyon Melter before the Spare Melter set is begun.

2. The vendor shall include in the quotation the fabrication time, in working days, to complete each item.

E. Machining Procedures

1. Item 1 - Bottom Center Blocks A & T

- a. Refer to Drawing D-185718. A matched set, consisting of one A and one T block, will be furnished by Carborundum as follows:

- 1) Both blocks will be 16 5/8" diameter solid cylinders with an as-cast O.D.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
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V. REFRACTORY REQUIREMENTS (Cont'd)

2) Top and bottom surfaces will be blanchard ground, flat and parallel, within .010", to the final dimensions shown on D-185718.

3) One surface on each block will be marked "top".

b. Set up each block and bore the 7.120" diameter hole such that the drill enters the surface marked "top".

c. Set up the A & T blocks on a common mandrel such that the top surface of T is against the bottom surface of A.

d. Taper grind the O.D. to the final dimensions shown on drawing D-185718.

e. After final inspection and approval, return both Item 1 blocks to Carborundum.

2. Item 2 - Riser Blocks V₁, V₂, and U.

(C) a. All blocks shall be Epic-3 cast as solid cylinders, with allowances for machining to the finished dimensions per Drawing D-185719.

(C) b. V₁ block, D-185719 shall be shipped to Hardface Welding and Machine Company for grinding the outside diameter sufficiently to meet drawing specifications. Hardface Welding shall also drill 11.25" through hole 28" long.

(C) Block will be O.D. ground on caps which will result in a step being left on both ends approximately 1-1/2" long at a diameter equal to as-cast diameter. HFW will return block to Rock of Ages for wire cutting 48" radius contour.

(C) c. V₂ block, D-185719, same as V₁ block except V₂ block to be shipped to Carborundum Company for cutting to length (steps will be removed at this time) and ends finished to drawing.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 7

V. REFRACTORY REQUIREMENTS (Cont'd)

- (C) d. The wire-cut V₁ block shall be returned to Carborundum for fitup and match-marking.
- (C) e. U block, D-185719, Hardface Welding will drill 11.25" diameter through hole. They will grind outside diameter for sufficient length to meet drawing requirements. Grinding will result in steps on both ends.
- (C) f. U block will be returned to Carborundum for cutting both ends, length to be specified by HFW. One end to be ground square by Carborundum to provide reference point to drill 12.5" diameter side hole.
- (N) g. U block is returned to HFW for drilling 12.5" diameter side hole.
- h. U block returned to Carborundum for cutting 25°-30' angle and final machining to length per drawing.
- (N) i. U block returned to HFW for hand grinding of intersecting hole.
- (N) j. U block returned to Carborundum for final fit and grind to length with Blocks V₁ and V₂ and align the 12-1/2" diameter hole with gaging fixture, Drawing W-741477.

3. Item 3 - Throat Block F

- a. Refer to drawing D-185718. One F block will be furnished by Carborundum as follows:
 - 1) Inside curved surface will be as cast.
 - 2) Outside curved surface will be ground smooth.
 - 3) All other surfaces will be ground flat. Top and bottom surfaces will be flat and parallel within .010".

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
PAGE: 8

V. REFRACTORY REQUIREMENTS (Cont'd)

- b. Prior to shipping the F block, Carborundum will locate and mark the position of the 11.25" diameter hole on the outside curved surface, using the bore of the V₁ block as a template. The vendor shall arrange to have a representative at Carborundum during this operation.
 - c. Bore the 11.25" hole at the exact position and angle shown on Drawing D-185718. The location and orientation of this hole is critical for proper fit-up of the riser heater. The vendor shall construct a jig to locate and guide the core drill.
4. Item 4 - Sidewall Blocks L & G
- a. Refer to Drawing D-185718. Two L blocks and two G blocks will be furnished by Carborundum as follows:
 - 1) Inside and outside curved surfaces will be as cast.
 - 2) All other surfaces will be ground flat. Top and bottom surfaces will be flat and parallel within .010".
 - b. Prior to shipping the L and G blocks, Carborundum will locate and mark the position of each 4.25" diameter hole on the outside curved surface, using a template on the refractory gaging fixture. The vendor shall arrange to have a representative at Carborundum during this operation.
 - c. Bore the 4.25" hole through each block as follows:
 - 1) The hole must be parallel to the bottom surface within .010".
 - 2) The hole centerline must be oriented on a true radial angle. This is critical to ensure correct alignment of the hole with the melter vessel nozzles. Refer to Drawing W-728051, which shows the orientation of these holes for the electrode assembly.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
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V. REFRACTORY REQUIREMENTS (Cont'd)

5. Item 5 - Bottom Center Blocks A & T

This item is the duplicate set of A & T blocks for the spare melter. See Paragraph V.E.1. for machining procedures.

6. Item 6 - Riser Blocks V₁, V₂, & U

This item is the duplicate set of V₁, V₂, & U blocks for the spare melter. See Paragraph V.E.2. for machining procedures.

7. Item 7 - Throat Block F

This item is the duplicate F block for the spare melter. See Paragraph V.E.3. for machining procedures.

8. Item 8 - Sidewall Blocks L & G

This item is the duplicate set of L & G blocks for the spare melter. See Paragraph V.E.4. for machining procedures.

VI. PREPARATIONS FOR SHIPPING

The vendor shall package the refractory, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall include:

- A. Sturdy wood crates.
- B. Additional protection for corners and machined surfaces.
- C. Use of pallets to permit loading and unloading with a forklift truck.
- D. Provisions to minimize stresses on packed refractory.
- E. Use of an exclusive truck with weather protection for shipment.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6849
REV: 2
DATE: September 26, 1985
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VII. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.
2. See Paragraph VIII for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspections

- a. After each refractory shipment arrives at the vendor's shop, visually inspect each block for shipping damage.
- b. Du Pont approval of each block is required before the blocks are machined.
- c. Check and approve all tooling and fixtures.

2. Intermediate Inspection

Prior to each machining operation, check and approve the set up for conformance to the machining procedures, Paragraph V.E.

3. Final Inspection

Check and approve the following details for each item.

- a. Conformance to drawing dimensions and tolerances.
- b. Preparations for shipping per Paragraph VI.
- c. Shipping destinations per Page B.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2871) TEL 803-725-6211 WU AUGUSTA (GA)

DATE		
MO	DAY	YR
4	20	88

ORDER NO.

AXC 6854-W ALT 3

TO
TOLEDO ENGINEERING COMPANY
3400-T EXECUTIVE PARKWAY
TOLEDO, OH 43606FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM. PACKAGE. CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY
PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD.
DEFENSE PRODUCTS MATERIALS AND SERVICES NEEDED TO FULFILL THIS ORDER
DO NOT CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

DO NOT CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
<p>PREVIOUS TOTAL PRICE \$283,602.41</p> <p>ALTERATION #3 INCREASE 4,189.68</p> <p>NEW TOTAL PRICE \$287,792.09</p> <p>PER INVOICE #19604 DATED 3/4/88 APPROVED BY J. D. GUTMANN</p>			

SHEET ☐ FINAL ☐

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO. AXC-6854-W

DEST See Body

EXECUTED BY *R. V. DONALL* 5/3ISSUING POINT
XXXXXXXXXX Wilm., DE

ORIGINATOR

BUYER AMOUNT
4,189.68

ITEM NO. GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2871) TEL 803-725-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
4	20	88

ORDER NO.

AXC 6854-W AL1

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLACED
SHOWN ON EACH ITEM PACKAGE. CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.FURNISH
PACKING
LIST
FOR EACH SHIPMENTTO
TOLEDO ENGINEERING COMPANY
3400-T EXECUTIVE PARKWAY
TOLEDO, OH 43606Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-83.
REQUIRED DELIVERY PROMISED SHIPPING DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOE.
DETACHING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DOE-1 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

E-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

REFRACTORY-INSTALLATION

ALTERATION ISSUED TO INCLUDE ADDITIONAL COST FOR THE FOLLOWING:

- PREPAID FREIGHT CHARGES TO SHIP DU PONT-OWNED
FIXTURES FROM TOLEDO, OH TO SAVANNAH RIVER PLANT \$3,175.15
- TIME AND EXPENSE TO SHIP K-3 REFRACTORY BLOCKS,
ON A RENTED TRUCK, FROM TOLEDO, OH TO FALCONER, NY \$1,014.53

ABOVE PRICES INCLUDE OVERHEAD (10%) AND PROFIT (15%).

ASSIGNMENT

THE WHOLE OR ANY PART OF THIS PURCHASE ORDER SHALL BE
ASSIGNABLE BY DU PONT TO THE GOVERNMENT OR TO THE CONTRACTOR
SELECTED BY DOE TO SUCCEED DU PONT AS THE OPERATING
CONTRACTOR FOR THE SAVANNAH RIVER PLANT. SUCH ASSIGNMENT
SHALL BE EFFECTIVE UPON THE DATE THE GOVERNMENT OR SUCCESSOR
CONTRACTOR ASSUMES THE RIGHTS, DUTIES, AND OBLIGATIONS OF DU
PONT TO THE SELLER (SUBCONTRACTOR) UNDER THIS PURCHASE ORDER.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO. AXC-6854-W

DEST See Body

EXECUTED BY

R. L. DONALL

ISSUING POINT

XXXXXX WILM., DE

ORIGINATOR

BUYER

AMOUNT

4,189.68

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXE
CERTIFICATE NO 2139 WHICH AUTHORIZES
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

(TWX: 810-771-2871)

TEL 800-728-8211

WL: AUGUSTA, GA)

VC: 03162

TO

(419) 537-9711
Toledo Engineering Co.
3400-T Executive Parkway
Toledo, OH 43606FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
08	18	86

ORDER NO. **A18-0**
AXC 6854WORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAIN
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE &
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SEC R
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DPM-1 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 11

D-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION

CASH TERMS

VA

FOA

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Modify order in part in accordance with the attached
revised specification. (See summary of changes
Page AAA)

1	S350-185-12	Refractory-Installation	\$134,500.00
1	S999-350-12	Refractory-Installation	\$139,615.00

Per Spec. 3-6854 Rev.3 dated 05/29/86
attached and made part of this order.

Previous Price	\$263,000.00
Alt. 01 Increase	\$11,115.00
New Total Price	\$274,115.00

Per quote dated 8/12/86
by G. S. Boos

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E I DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-6854-W A01

EXECUTED BY

J. E. Brown

ISSUING POINT

XXXXXXXXX Wilm, DE

ORIGINATOR

1-0

BUYER

AMOUNT
\$11,115

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

mfc

DIRECT ALL INQUIRIES TO THE A
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXE
CERTIFICATE NO 2139 WHICH AUTHORIZES
PONT DE NEMOURS & COMPANY TO PURCHA
TANGIBLE PERSONAL PROPERTY AT WHOLESA
PAY TAX WHERE APPLICABLE DIRECTLY TO THE
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6854
REV: 3
DATE: May 29, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR REFRACTORY INSTALLATION

TABLE OF CONTENTS

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I. IDENTIFICATION	1
II. GENERAL	1
III. DRAWINGS	7
IV. INSTALLATION PROCEDURE	9
V. INSPECTION SPECIFICATION	15
(N) VI. PREPARATION FOR SHIPMENT	16
(N) VII. DOCUMENTATION	16

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 951780
 SPEC: 3-6854
 REV: 3
 DATE: May 29, 1986
 PAGE: AA

SUMMARY OF CHANGES PER REVISION #1

<u>PAGE</u>	<u>PARAGRAPH</u>	<u>CHANGE</u>
8	A.4	Rewritten
4	II.E.4.e	Eliminate Toledo responsibility
5	II.G	Rewritten
7	III.A	Added CB&I Drawing 4499-21
10	IV.D.3 & IV.D.4	Previous block designation "XX" now changed to "X"
13	IV.G.1.d	"Provide" substituted for install
14	IV.G.2.d	"Provide" substituted for install
15	IV.J.5	"18" added and designation changed from Du Pont drawing to CB&I drawing

SUMMARY OF CHANGES PER REVISION #2

<u>PAGE</u>	<u>PARAGRAPH</u>	<u>CHANGE</u>
A	VI & VII	Deleted
16	V	Inspection (cont'd) 4. "Per Paragraph VII" deleted
	VI	Deleted
17	VII	Deleted

C = Changed
 2174W/jel

N = New

D = Deleted

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-6854
 REV: 3
 DATE: May 29, 1986
 PAGE: AAA

SUMMARY OF CHANGES PER REVISION #3

<u>PAGE</u>	<u>PARAGRAPH</u>	<u>CHANGE</u>
8		Installation dates revised
1	II.A	Revised scope paragraph
3	II.E.4	Added instruments furnished by Du Pont
5	II.F	Added paragraph on items furnished by CBI
6	II.G	Revised items by Toledo Engineering
7	II.I.4	Added requirements for control of tools
8	II.J	Added paragraph on nonconformance report
16	IV.J.5	Added E1D-539-N block designation
17	V.A.1&2	Added preliminary and final inspection requirements
18	VI	Added paragraph on preparation for shipment
18	VII	Added paragraph on Quality Assurance documentation

C = Changed
 2174W/jel

N = New

D = Deleted

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6854
REV: 3
DATE: May 29, 1986
PAGE: 8

TIMING AND SHIPPING REQUIREMENTS

The following dates have been established to meet the Defense Waste Processing Facility Program Schedule.

A. Procurement Dates

1. Quotations are due on or before September 6, 1985. The vendor shall quote each installation separately.
2. The vendor will be released to procure fixtures and tools required to install refractory, and such other materials and/or equipment as will be required for this order, with the placement of this order.

(C) B. Installation Dates

The following are the scheduled dates for the refractory installation at the Chicago Bridge & Iron Co. Plant in Cordova, AL. Toledo Engineering Co. shall ship all refractory components from the Toledo, OH warehouse to Cordova when the installation is scheduled to begin.

1. Canyon Melter February 1987
2. Spare Melter September 1987

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I. IDENTIFICATION

EN S350-185-12	Refractory-Installation Canyon Melter
EN S999-350-12	Refractory-Installation Spare Melter

II. GENERAL

(C)

A. Scope

This specification covers requirement for storage and installation of refractory and insulation materials in two (2) melter vessels, for the Defense Waste Processing Facility (DWPF), at the Savannah River Plant, Dunbarton, S.C. The DWPF melter is a larger version of the prototype scale melter. Refractory was installed in the latter by Toledo Engineering on previous Du Pont Order AXC-5803-W.

The refractory will be installed in the vessels at the Chicago Bridge and Iron Shop in Cordova, AL, near Birmingham. Fabrication constraints do not permit completion of both vessels at the same time. For this reason, installation of refractory in the second vessel will be approximately seven months after the first unit. All refractory and other items furnished by Du Pont will be shipped to Toledo Engineering's warehouse, for storage, in advance of the installation date.

Toledo Engineering shall arrange to ship the material for each installation to the CBI Cordova shop when the vessels are completed.

Toledo shall also provide a representative to visit the CBI site in advance, and participate in final inspections at the following refractory plants:

1. Carborundum Co., Falconer, NY.
2. Harbison-Walker Co., Vandalia, MO.

B. Melter Configuration

The melter assembly, Du Pont Drawing W-732366, consists of a water cooled cylindrical shell with dished heads, a layer of insulation, and refractory lining. Energy for the glass melt is provided by immersed plate electrodes.

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C. Melter Application

The objective of the DWPF melter is to process radioactive waste materials on a full scale operational basis. The facility will prepare radioactive waste material for long term storage by converting it into a stable borosilicate glass form.

The DWPF melter will operate with radioactive material. It is the intent of this specification to ensure that the melter refractory is installed with the exacting degree of precision and attention to detail that is required for safe, continuous, maintenance free operation for a period of several years.

D. Refractory Tolerances

The refractory for this application must be installed to exacting fits and tolerances. This is dictated by the unique operating conditions of DWPF melters. These include:

1. Long Term Reliability

Once started up, the melter must be operated and maintained by remote control for a period of years.

There are no provisions for repairing or replacing refractory. If the refractory fails, the entire melter must be removed from service.

2. Glass Containment

Glass cannot be permitted to migrate through the refractory to the shell, as this would short out the electrode power supply. For this reason, all gaps at refractory joints must be held to an absolute minimum.

E. Items by Du Pont

Du Pont shall furnish the following:

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1. Melter Shell & Head

The Chicago Bridge & Iron Co., Birmingham, AL will fabricate the melter shell and head per Drawing PV-184722, Rev. 0, and the referenced details included thereon.

The shell, less head, will be mounted on a support frame that is 11'-0" wide x 17'-3" long x 0'-14" high, see model photographs, Figures 1 and 2. The head will be supported in a rotating fixture. Both shell and head units will be made available at the fabricators shop site, Cordova, AL for installation of the refractory and insulation materials by Toledo Engineering personnel.

2. Post Assembly for K-3 Refractory Center Blocks

(C) CB&I will fabricate two posts per CBI drawing 44993-25, Rev. 1. One will be used by carborundum to fit the refractory to the gaging fixture contour. The duplicate post will be installed by CBI in the melter vessel bottom nozzle for alignment of the K-3 center blocks.

3. Trammel Assembly

This item, shown on Drawing W-742149, will be shipped from Carborundum with the K-3 refractory. It is furnished as a tool for checking final fit-up and alignment of the sidewall refractory.

(N)

4. Precision Master Level and Bevel Protractor

These items will be furnished by Du Pont to check level and angles of the installed refractory.

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5. Refractory

a. Monofrax® K-3

The Carborundum Company, Falconer, NY, will fabricate this material per Du Pont Drawings D-185718, D-185719 and D-185720. Carborundum will also preassemble all K-3 blocks in a gaging fixture assembly per W-741477 and establish match marks and working points. A representative from Toledo Engineering shall witness and approve this match marking at Carborundum during the final inspection by Du Pont.

Monofrax® K heat set cement will be furnished with the above.

b. Zirmul®

The Didier Taylor Refractories Corporation, South Shore, Kentucky, will fabricate this material per Du Pont Drawing D-185717. Didier Taylor will also preassemble all blocks in a gaging fixture assembly per W-742111 and W-741478 and establish match marks and working points.

The Zirmul® will be shipped to Toledo Engineering in the gaging fixture as shown in Assembly #2, Drawing W-741478. This shipment will be made from the Rock of Ages Corporation, Barre, Vermont.

Shamrock 391 chrome alumina mortar will be furnished with the above.

c. Superstructure Refractory

The Herbison-Walker Co., Vandalia MO, will fabricate the superstructure refractory per BPF 215723.

d. Fiberfrax® T-30 - Formed Shapes

Metaulics Systems, Inc., Solon, Ohio, will fabricate top head, bottom head and riser Fiberfrax® shapes per Drawing W-741479, W-741480 and W-743482.

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e. Fiberfrax® - Miscellaneous Bulk, Paper & DSM

The Carborundum Company, will furnish the following insulation material.

<u>Item</u>	<u>Description</u>	<u>Qty</u>
1	Fiberfrax® Durablanket®, 8 lb/ft ³ density	Two rolls 24 inches wide by 25 feet long by 1/4 inch thick
2	Ditto	Two rolls 24 inches wide by 25 feet long by 1/2 inch thick
3	Ditto	Two rolls 24 inches wide by 25 feet long by 1-1/2 inches thick
4	Fiberfrax® Coating Cement QF-180	Three gallons
5	Fiberfrax® 970JH Paper	Four rolls 24 inches wide by 50 feet long by 1/8 inch thick
6	Fiberfrax® DSM-24 (LDS with 24% Colloidal)	1000 lbs - shipped in 5 gallon pails
7	Fiberfrax® Bulk Fiber, Washed	50 lbs

(N) F. Items - By CBI

The following items will be furnished by CBI as part of Du Pont's existing melter vessel fabrication order:

1. A 95' x 50' work and storage area at the Cordova plant, per Figure 1.

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2. Natural gas, power, compressed air, and water utilities per Figure 1.
3. Movable ramp for unloading trailers.
4. Jib mounted crane on column per Figure 2.
Capacity: 3000 lbs @ 24'-8".
5. Normal building lighting.

(C) G. Items by Toledo Engineering

Toledo Engineering shall furnish all other fixtures, tools, and equipment required to unload, transport, and install the refractory. See paragraph II.I.3 for tool requirements.

H. Environment

a. Storage Environment - Toledo Engineering

All materials shall be stored indoors in a clean, dry storage area.

b. Installation Environment - CB&I

During refractory installation, CB&I will maintain the following conditions in the refractory installation area:

1. The melter shall be kept dry.
2. Temperature of the shell and inside air shall be maintained between 60°F and 100°F.
3. All materials shall be at least 60°F, but not more than 95°F.

I. Installation Requirements.

All installation procedures, including material handling, must be performed to meet exacting requirements for final fit-up and appearance. This attention to detail is necessary to ensure that the refractory lined vessel meets long-term reliability requirements. To ensure the best possible results, general requirements shall include the following:

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1. The epoxy coating on the inside surfaces of the melter shell and head serves as a final barrier for electrical isolation and corrosion resistance. The integrity of this coating must be preserved, as scratches or chips, will defeat its purpose. Extreme care must be taken to prevent damage to this coating. This includes layout lines: scribing with a pointed tool is not permitted.
2. All preformed refractory shall be handled with extreme care to avoid chipping or breakage. Refractory shall be unloaded from pallets, and placed in the work area, to minimize the movement of blocks during assembly. Refractory shall not be thrown against each other or other hard objects when being handled. All other materials shall be handled so that the original containers will not be ruptured or damaged. Any materials damaged by Toledo Engineering shall be replaced at no cost to Du Pont.
3. Refractory shall be installed by refractory brick masons experienced in high-temperature glass furnace construction. Qualified supervision shall be on the site at all times when work is in progress. Vendor supervision shall be thoroughly familiar with all drawings and provisions of this specification including manufacturers' data sheets and mixing instructions.
- (C) 4. Tools used in installing the refractory shall be rubber or plastic covered or non-metallic to avoid chipping the edges of the brittle refractory. Locked boxes shall be used to control all tools and instruments on the site.
5. Where permitted, refractory shall be cut with masonry saws with diamond blades only. No chipping or hammer cuts will be permitted.
6. No refractory brick or shape, less than one-half of the original size, shall be installed.
7. Each brick shall be installed so that it is keyed in place by adjacent brickwork. No brick shall be installed which is smaller on the back face than on the exposed face.

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- 8. Chipped or broken brick shall not be used in this vessel unless approved in writing by Du Pont.

(N)

J. Nonconformance Reports

Any nonconformance that occurs during refractory installation shall be reported to the Du Pont QAFR at CBI or J.D. Gutmann at the Du Pont Engineering Department, for resolution.

III. DRAWINGS

A. Installation Drawings

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
W-736915	0	Refractory Assembly Sheet 2
W-736916	0	Refractory Layout Dimension Documentation Sheet 2
W-737669	0	Refractory Assembly Sheet 1
A-247-328-L	-	Lining for DWPF Melter
D-185715	2	Fiberfrax Details Sheet 1
D-185716	7	Fiberfrax Details Sheet 2
D-185717	0	Zirmul Details
D-185718	3	K-3 Details Sheet 1
D-185719	1	K-3 Details Sheet 2
D-185720	3	K-3 Details Sheet 3
44991-21	5	Top Head and Flange Assembly

B. Fixture Drawings

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
W-741477	11	K-3 Refractory Gaging Fixture Assembly
W-742149	3	Trammel & Gaging Assy's
D-183699	15	Gaging Fixture Sheet 3
D-186815	17	Gaging Fixture Sheet 1
D-186816	13	Gaging Fixture Sheet 2
W-742111	0	Zirmul Fixture Assembly
D-186809	0	Zirmul Fixture Details Sheet 1
D-186811	3	Zirmul Fixture Details Sheet 2
D-186810	3	Zirmul Template Details

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<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
W-741479	1	Top Head Fiberfrax Forming & Trim Fixture Assembly
W-741480	1	Bottom Head Fiberfrax Forming & Trim Fixture Assembly
W-743482	0	Sidewall Fiberfrax Forming & Trim Fixture Assembly
D-186813	0	Bottom Head Fiberfrax Forming & Trim Fixture
D-186814	1	Top Head Fiberfrax Forming Fixture
D-186825	1	Bottom Head Fiberfrax Trim Fixture
D-187144	0	Top Head Fiberfrax Trim Fixture
D-187370	2	Sidewall Fiberfrax Forming & Trim Fixture Details

C. Vessel Drawings

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
PV184722	9	Shell Assembly DWPf Melter
D-185972	13	Shell Sheet 2 DWPf Melter
D-185978	23	Shell Sheet 8 DWPf Melter
D-185980	20	Shell Sheet 10 DWPf Melter
D-186204	22	Top Head DWPf Melter

D. Reference Drawings

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
W-732366	22	DWPf Melter Section

E. Model Photographs

Figure 1 Melter Support Frame
 Figure 2 Melter Shell Installation Support Frame

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IV. INSTALLATION PROCEDURE

A. General

1. Match marks and working points have been established during preassembly operations on all Zirmul® and K-3 blocks. These marks must be aligned at assembly in the shell, to ensure proper fit-up, elevation, and orientation. The most critical alignment points are as follows:
 - a. Plane of ground top surface of Zirmul® blocks Z (Drawing D-185717). This establishes the elevation and vertical alignment of the K-3 side wall courses.
 - b. Riser section, between K-3 throat block F, and riser blocks V and U Drawings D-185715, D-185718 and D-185720. This establishes alignment of the bored holes for the riser heater.
 - c. Electrode locations, four (4) total, between drilled K-3 blocks G and L, and the melter shell nozzles.

B. Mortar

1. In general, joints between refractory blocks shall be filled with mortar. The only anticipated exceptions are the following:
 - a. Horizontal joint between the Zirmul® Z ring and K-3 D ring. Mating surfaces of these rings have been ground at Rock of Ages and at Carborundum.
 - b. Horizontal joints between the K-3 sidewall courses. These surfaces have been blanchard ground at Carborundum.
2. Toledo Engineering shall determine how much mortar, if any, to apply to all other joints based on final fit-up and alignment.
3. Shamrock 391 chrome alumina cement shall be used on all Zirmul® sub-base joints per Paragraph IV.D.

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VIII. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following information for each refractory block.
 1. Finished dimensions to the nearest .005".
 2. Weight of each block to the nearest pound.
- C. Each certification page shall include the following information:

K-3 Monofrax Refractory - Final Dimensions
Project 9S1780
Du Pont Order AXC-6849-W
EN S350-185-12-12 (For items 1 through 4)
EN S999-350-12-12 (For items 5 through 8)
- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.
- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VIII.B.1.a., to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviere Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann
- F. The remaining sets shall be sent at time of shipment as follows:
 1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)

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VIII. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

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4. Monofrax® K heat set cement shall be used on K-3 bottom and sidewall vertical joints per Paragraphs IV.E. and F.
5. Korundal Bond Mortar (air setting) or Korundal Mortar (heat setting) shall be used for the Korundal® XD super structure refractory.

C. Bottom Insulation

1. Install adapter ring D-186816-D on the mandrel post.
2. Install the Fiberfrax® bottom head insulator, D-185715-A and center it on the adapter ring.
3. Install twelve (12) Fiberfrax® corner segments, D-185715-B. One segment is longer and must be cut to final length for proper fit-up. Two spare long pieces are also provided.

D. Bottom Refractory - Sub-Base

1. Install the lower K-3 center block T (Drawing D-185718) over the mandrel. Set and align the block using location points established during preassembly.
2. Install the upper K-3 center block A (Drawing D-185718) over the mandrel post and align the block using location points established during preassembly. After setting, secure both center blocks using the plywood washer, nut, and spanner wrench furnished with the melter shell D-186811-D and D-186811-B. The nut must be tightened with care to prevent excessive bolting pressure. Overtightening may crack the block or deform the Fiberfrax® liner.
3. Install four (4) Zirmul® X blocks around center block T. These must be located precisely from the match marks and working points during preassembly.

Fill all X to T joints and X block to block joints with Shamrock 391 chrome alumina mortar.

4. Install sixteen (16) Zirmul® Y blocks around the X blocks, aligning match marks and working points. Fill all Y to X joints and Y block to block joints with Shamrock 391 mortar.

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5. Install twenty four (24) Zirmul® Z blocks around the Y blocks, aligning as previous. Fill all Z to Y block joints and Z, block to block joints with Shamrock 391 mortar.
6. Use Shamrock 391 mortar to fill the joint between the outer diameter of the Z blocks, and the Fiberfrax® corner segments (Drawing W-736915). This joint should be a nominal 1/8". If the gap exceeds 1/8", notify J.D. Gutmann, Du Pont Engineering Dept., before proceeding further.

E. Bottom Refractory - Monofrax® K-3

1. Install eight (8) K-3 B blocks around center block A, aligning match marks and marking points. Fill all B to A joints and B block to block joints with Monofrax® K heat set cement.
2. Install sixteen (16) K-3 C blocks around the B blocks, aligning match marks and working points.

Fill all B to C joints and C block to block joints with Monofrax® K heat set cement.

3. Install sixteen (16) K-3 D blocks around the C blocks, aligning match marks and working points. Fill all D block to block joints with Monofrax® K heat set cement. Do not use cement on the horizontal joint between the D blocks and underlying Z (Zirmul®) blocks.
 - a. At this point in the assembly procedure, measure and record the outside diameter of the D block ring at approximately 22-1/2° increments. This dimension must fall within the 64.0" maximum and 63-3/4" minimum limits exclusive of as-cast variations.
 - b. The blanchard ground top surfaces of the twelve (12) D blocks shall be in the same horizontal plane. This plane, when measured from the top surface of the vessel flange, shall be 55-1/64" $\pm$ 1/32".
4. Install the Fiberfrax® T-30R sleeve, D-185716-B in the riser.

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5. There is a nominal 3/4" annulus between the refractory and the vessel sidewall. This annulus must be filled with Fiberfrax® DSM-24, using the Du Pont furnished pump and rodded during the filling operation to eliminate voids.

At each filling stage, pump in excess material such that the DSM-24 surface is above the top surface of the block course. Allow sufficient time for the DSM-24 to cure, then trim the excess flush with the upper block surface before beginning the next course.

6. Fill the annulus between the D blocks and vessel wall with DSM-24 per preceeding Paragraph IV.E.5. During the filling operation, precautions shall be taken to ensure that:
 - a. DSM-24 fills the annulus under the Fiberfrax® sleeve.

F. Throat and Riser Blocks

1. Install one (1) Monofrax® K-3, F block.
2. Install one (1) Monofrax® K-3 V₁ block, one (1) second course V₂ block, and one (1) third course U block, aligning match marks and working points. Care must be taken during installation of these blocks to avoid damaging the Fiberfrax® sleeve. Verify that the sleeve edge is flush with block F at all points.
3. Install the first K-3 throat block M. Verify the following conditions:
 - a. Block M is flush with throat block F.
 - b. The 11-1/4 in. diameter bored holes in blocks F and V are aligned within 1/32" total.

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4. Fill the following joints with Monofrax® K heat set cement:

- a. Joint between riser block V₁ and throat block F.
- b. Vertical joints between F, E, and H blocks, as required.

Do not use cement on the horizontal joints between the E and H blocks and the D blocks.

5. Fill the annulus between throat blocks and vessel wall with DSM-24 per Paragraph IV.E.5. Pump the DSM-24 in from the top and sides to ensure a void-free fill around the Fiberfrax® sleeve. During the filling operation, verify that the sleeve remains flush against the F block.

G. Sidewall Refractory - Monofrax® K-3

1. Install the balance of the first course of K-3 sidewall refractory, consisting of twelve (12) E blocks, four (4) H blocks, and two (2) G blocks aligning match marks and working points. Fill all block to block vertical joints between E, F, G and H blocks with Monofrax® K heat set cement as required. Do not use cement in the horizontal joint between the D and E courses.
 - a. Measure and record the outside diameter of the E course per Paragraph IV.E.3.a.
 - b. Verify that the blanchard ground top surface of the E, G, and H blocks lie in the same horizontal plane.
 - c. Verify alignment of the 4-1/4" diameter holes in the G blocks with the 6.40" diameter holes in the nozzles. Block to nozzle hole centerlines must be aligned within 1/32" total.
 - d. Provide two (2) plugs in the lower shell nozzles, block G, per Drawing D-(Later).
 - e. Fill the annulus between the E, G and H blocks and vessel wall with DSM-24 per Para. IV.E.5. During the filling operation, pump and rod the DSM-24 at the G block locations to ensure a void-free fill around the nozzle plugs.

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2. Install the second course of K-3 sidewall refractory, consisting of twelve (12) J blocks, four (4) K blocks and two (2) L blocks, aligning match marks and working points. Fill all block to block vertical joints between J, K, L and M blocks with Monofrax® K heat set cement, as required.
 - a. Measure and record the outside diameter of the J course per Para. IV.E.3.a.
 - b. Verify that the blanchard ground top surface of the J, K, L, and M blocks lie in the same horizontal plane.
 - c. Verify alignment of the 4-1/4" diameter holes in the L blocks with the 6.40" diameter holes in the nozzles. Block to nozzle hole centerlines must be aligned within 1/32" total.
 - d. Provide two (2) plugs in the upper shell nozzles, block L.
 - e. Fill the annulus between the J, K, L, and M blocks and vessel wall with DSM-24 per Para. IV.E.5. During the filling operation, pump and rod the DSM-24 at the L block locations to ensure a void-free fill around the nozzle plugs.

H. Superstructure Refractory - Korundal® XD

1. Install two (2) layers of 1/8" thick 970 JH Fiberfrax® paper (total thickness 1/4") on the vessel sidewall between the K-3 course and the flange. Hold the paper in place with Fiberfrax® coating QF-180.
2. In the area between the top course of K-3 refractory and the vessel flange install the following per Dwg. A-247-328-L (BPF 215723).
 - a. Five courses of Korundal® XD. Either the top or the lower course must be cut to maintain 1" between the top surface and the vessel flange.

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- b. Eight (8) heater blocks, E1D-539-WR and E1D-539-WL. As supplied, these blocks have a 1" allowance on the bottom surface. Cut off the excess material on each block such that the centerlines of the 4" block holes and 4-1/2" nozzle holes are aligned within 1/32".
- c. Four (4) courses of 50 pcs. per course installed between (b) above.
- d. One (1) course of 80 pcs. per course installed on top of (b) and (c) above.

J. Head Refractory - Korundal® XD

- 1. The melter head refractory is the same Korundal® XD material as the superstructure refractory. The joints will be 1/16" maximum and will be filled with Korundal Bond Mortar (air setting) or Korundal Mortar (heat setting).
- 2. Install 1.0" thick molded Fiberfrax® top head insulator and center it on the top head mandrel.
- 3. Install two (2) layers of 1/8" thick 970 JH Fiberfrax® paper (total thick = 1/4") in the knuckle radius area of the head, between the 1" thick molded Fiberfrax® and the flange face. Hold the paper in place with Fiberfrax® coating QF-180.
- 4. The installation of the melter head refractory will be accomplished per Harbison-Walker Drawing A-247-328-L, starting with the center sleeve and working out toward the knuckle radius of the dished head. The holes in the refractory must be centered around the corresponding holes in the melter head. Harbison-Walker will preassemble the bricks, in a fixture, around the eight (8), 4-1/2" diameter openings and two (2), 8" diameter openings in the head to assure proper fit-up.
- 5. In the knuckle radius area of the dished head, 72 segments of Korundal® XD per H-W Designation E1D-539-N are to be installed above the previously installed Fiberfrax® paper.

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D = Deleted

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PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6854
REV: 3
DATE: May 29, 1986
PAGE: 17

The latter segments must be notched by Toledo Engineering on the lower flange face surface to clear 18 retaining bars per CBI Drawing 44991-21.

Responsibility for the proper installation of the retaining bars shall reside with the refractory installer.

V. INSPECTION

- A. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.

(N)

1. Preliminary Inspections

- a. The QAFR shall inspect all materials delivered to Toledo Engineering to verify that the shipments are complete and have not been damaged during shipment.
- b. Inspect and approve the preparations for shipping materials to CBI per paragraph VI, page 16.

2. Final Inspection

The QAFR shall:

- a) Witness and approve all phases of the refractory installation, and verify that each phase meets specification requirements.
- b) Verify that refractory is installed in accordance with dimensions on the assembly drawings.
- c) Witness and approve the documentation per paragraph VII.

- B. Du Pont's Quality Assurance Engineering Section shall inspect all phases of the refractory installation and reserves the right to reject any phase of the installation which does not meet these specifications. Rework shall be done by the vendor at no additional cost to Du Pont.

SPECIFICATION

PLANT: SAVANNAH RIVER
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- C. Any variations between these specifications and drawings or manufacturers printed instructions shall be brought to the attention of Du Pont and rectified before installation proceeds.

(D)

(N) VI. PREPARATION FOR SHIPMENT

Toledo Engineering shall ship the refractory and insulation to CBI in the original shipping containers, as received from the refractory manufacturers. Prior to shipment, the Du Pont QAFR shall verify that the containers are adequately protected and tied down to prevent movement during transit.

(N) VII. DOCUMENTATION

- A. Toledo Engineering shall prepare a documentation inventory transmittal sheet (listing all documents and number of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list Du Pont P.O. number, equipment identification, and be consecutively numbered.
- C. The Du Pont QAFR shall review documentation packages and sign and date each documentation inventory transmittal sheet signifying acceptance.
- D. Each documentation package shall consist of four sets of photographs showing the refractory installation stages, and as-installed dimensions.

This information within two months after completion of each installation.

- One complete set to:

E. I. du Pont de Nemours & Co., Inc.
Engineering Department
Louviere Building 3321
Newark, DE 19711
ATTN: Mr. J. D. Gutmann

SPECIFICATION

PLANT: SAVANNAH RIVER
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DATE: May 29, 1986
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- One complete set (including signed documentation inventory transmittal sheet) to be included with shipment and marked as follows:

Attn: Receiving Supervisor - Construction
Savannah River Plant

- Two complete sets (including signed documentation inventory transmittal sheet), best way to:

E. I. du Pont de Nemours & Co.
Savannah River Plant
Construction Project Manager
P.O. Box 117
Augusta, GA 30913

ATTN: Construction Material Expeditor
Building CAB/CS

- One copy of signed documentation inventory transmittal sheet (by mail) to:

E. I. Du Pont de Nemours & Co.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898-7108
ATTN: S. B. Hicks

- F. The Du Pont QA/R shall verify transmittal of documents per Paragraph V A.2.C and state verification in night message.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

J.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

(TWX: 810-771-2871)

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913

TEL 803-725-8211

WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
09	19	85

ORDER NO.

AXC 8976W

VC: 08681
TO(802) 476-3115
Rock of Ages Corporation
Industrial Products Division
Box 482
Barre, VT 05641FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE PLAINED
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY
PROMISED SHIPPING
DATE

11/15/85

See Body

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF 30C 4
DEFENSE PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DO-4-1 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

B-1-1-21 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

N30

VIA

FOB

Destination

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
		S350-185-12-13 K-3 Refractory Wire Cutting and Grinding	\$9,640.00
		S350-185-12-22 Zirmul Refractory Grinding	\$8,303.00
		S999-350-12-13 K-3 Refractory Wire Cutting and Grinding	\$9,640.00
		S999-350-12-22 Zirmul Refractory Grinding	\$8,303.00
Per Spec. 3-8976 dated 07/09/85 attached and made part of this order.			
Total Firm Price			\$35,886.00
Per quotation letter dated 8/21/85 by J. Gregory			

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

See Body

DEST

AXC-8976-W

EXECUTED BY

L. J. Kana

ISSUING POINT

AUGUSTA, GA XXXXXXXX Wilm, DE

ORIGINATOR

3-8976

BUYER

AMOUNT

\$35,886.

ITEM NO.

GENERAL LEDGER & COST CODE

951780

MC

DIRECT ALL INQUIRIES TO THE ABC
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SA
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SC
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION 3 - 6854 - REFRACTORY INSTALLATION

FIGURE 1

INSTALLATION & STORAGE AREA - C.B.I. CORDOVA SHOP

SPECIFICATION 3 - 6854 - REFRACTORY INSTALLATION

FIGURE 2

SET UP OF MELTER FOR REFRACTORY INSTALLATION

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

J.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
09	19	85

ORDER NO.

AXC 8976W

TO

VC: 08681

(802) 476-3115
Rock of Ages Corporation
Industrial Products Division
Box 482
Barre, VT 05641

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM. PACKAGE. CORRESPONDENCE AT INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

11/15/85

See Body

A ☒ B ☐YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
DO-8-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1)

E-1 (1) (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

N30

VIA

F.O.B.

Destination

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Per Inquiry A-3-8976 dated 8/7/85.

Ship to:
SEE SPEC

DU PONT INSPECTION IS REQUIRED ON THIS ORDER. IF INSPECTION DETAILS ARE NOT IN THE ATTACHED SPECIFICATION, YOU WILL RECEIVE A LETTER SHORTLY DESCRIBING THEM. TO SCHEDULE AN INSPECTION, CALL QUALITY ASSURANCE ENGINEERING AT 302-366-3601 AT LEAST 48 HOURS BEFORE INSPECTION IS NEEDED.

~~Vendor will be released to purchase material by alteration to this order.~~

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

Promised shipping date: 8 weeks after receipt of material from Didier Taylor.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

3-8976

ORDER NO.

See Body

EXECUTED BY

L. J. Kana

ORIGINATOR

1-0-

DEST

AXC-8976-W

ISSUING POINT

AUGUSTA, GA.

Wilm, DE

BUYER

AMOUNT

\$35,886.

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

MC

DIRECT ALL INQUIRIES TO THE AB BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA 3 AND USE TAXES PURSUANT TO EXEMPT CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PAY TAX WHERE APPLICABLE DIRECTLY TO THE S. CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8976
REV:
DATE: July 9, 1985
PAGE: A

ADDITIONAL QUOTATION REQUIREMENTS

Timing

The K-3 material, Paragraph IV.A and B, will be shipped to the vendor from the Carborundum Monofrax Plant in Falconer, New York. At a different time the Zirmul material, Paragraph IV.C, will be shipped to the vendor from the Didier Taylor Plant in South Shore, Kentucky. All the K-3 blocks for both Canyon Melter and Spare Melter will be shipped to the vendor in one shipment.

The Zirmul blocks will be sent in two shipments, the Canyon Melter set being sent initially, with the Spare Melter blocks being sent approximately three months later. The vendor shall include in the quote the time to complete each item, Paragraph VI, after receipt of the material. A quick turnaround time is necessary to maintain the program schedule.

Shipping

Item 1 - K-3 Refractory

On approval at final inspection, ship this item to:

The Carborundum Company
Refractories Division
Monofrax Plant
Falconer, New York 14733

Mark: Attn: S. E. Graham
For Use On Du Pont Order AXC-6846-W

Item 2 - Zirmul Refractory

On approval at final inspection, ship this item to:

Toledo Engineering Company, Inc.
8400 West Central Avenue
Sylvania, OH 43560

Mark: Attn: J. W. Crawford
For Use On Du Pont Order AXC-6854-W

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8976
REV:
DATE: July 9, 1985
PAGE: 1

I. IDENTIFICATION

A. Canyon Melter

EN S350-185-12-13 K-3 refractory wire cutting & grinding.
EN S350-185-12-22 Zirmul refractory grinding.

B. Spare Melter

EN S999-350-12-13 K-3 refractory wire cutting & grinding
EN S999-350-12-22 Zirmul refractory grinding

II. GENERAL

A. Scope

This specification covers the wire cutting of Monofrax K-3 refractory, and surface grinding of Zirmul refractory, for the Defense Waste Processing Facility (DWPF) glass melter.

B. Melter Configuration

The melter assembly, Du Pont Drawing W-732366, consists of a water cooled cylindrical shell with dished heads, a layer of insulation, and refractory lining. Energy for the glass melt is provided by immersed plate electrodes.

C. Melter Application

The objective of the DWPF melter is to process radioactive waste materials on a full scale operational basis. The facility will prepare radioactive waste material for long term storage by converting it into a stable borosilicate glass form.

D. Refractory Tolerances

The refractory for this application must be machined to exacting fits and tolerances. This is dictated by the unique operating conditions of DWPF melters. These include:

1. Long-Term Reliability

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing refractory. If the refractory fails, the entire melter must be removed from service.

SPECIFICATION

PLANT: SAVANNAH RIVER
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2. Glass Containment

Glass cannot be permitted to migrate through the refractory to the shell, as this would short out the electrode power supply. For this reason, all gaps at refractory joints must be held to an absolute minimum.

III. DRAWINGS

A. Refractory Drawings

W-736915, Rev 0 - Refractory Assembly, Sheet 2
W-736916, Rev 0 - Refractory Layout Dimension Documentation
D-185718, Rev 3 - K-3 Details, Sheet 1
D-185719, Rev 1 - K-3 Details, Sheet 2
D-185720, Rev 3 - K-3 Details, Sheet 3
D-185717, Rev 1 - Zirmul Details

B. Zirmul Grinding Fixture

W-742111, Rev 8 - Zirmul Fixture Assemblies, Sheet 1
W-742149, Rev 3 - Trammel and Gaging Assemblies
D-183699, Rev 15 - Zirmul and K-3 Trammel Details
D-186809, Rev 13 - Zirmul Fixture Details Sheet 1 of 2
D-186810, Rev 2 - Zirmul Template Details
D-186811, Rev 3 - Zirmul Fixture Details Sheet 2 of 2

C. K-3 Wire Cutting Fixture - Throat Block F

W-742668, Rev 6 - Wire Cutting Fixture Assembly - Throat Block F
D-187160, Rev 4 - Frame Weldment
D-187161, Rev 5 - Fixture Details, Sheet 1
D-188707, Rev 1 - Fixture Details, Sheet 2

D. K-3 Wire Cutting Fixture - Riser Block V1

W-804290, Rev 0 - Wire Cutting Fixture Assembly - Riser Block V1
D-198790, Rev 0 - Frame

SPECIFICATION

PLANT: SAVANNAH RIVER
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E. Drawings for Information

The following are submitted for information only:

W-732366, Rev 19 - DWPF Melter Assembly
W-741477, Rev 11 - K-3 Refractory Gaging Fixture Assembly

IV. ITEMS FURNISHED BY DU PONT

Du Pont will furnish the following:

- A. K-3 refractory throat block F per Drawing D-185718.
- B. K-3 riser block V₁ per Drawing D-185719.
- C. Zirmul refractory blocks X, Y and Z per Drawing D-185717.
These will be shipped as an assembly installed in the grinding fixture as shown on Drawing W-7421113.
- D. Wire cutting fixtures per Drawings W-742668 and W-804290.

V. ITEMS FURNISHED BY VENDOR

The vendor shall furnish the following:

- A. All cutters and grinding wheels required to complete the machining per Paragraph VI.
- B. Cams for wire cutting and grinding throat block F and riser block V₁ per Paragraphs VI.A.2. and 3.

VI. REFRACTORY MACHINING AND GAGING PROCEDURE

A. Item 1 - K-3 Refractory

- 1. Install K-3 refractory block F, Drawing D-185718, in the wire cutting fixture W-742668 and tighten the refractory loading screws.
- 2. With the block mounted securely in the fixture, wire cut the block on one set up using the vendor furnished cam.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 951780
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REV:
DATE: July 9, 1985
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3. Following the wire cutting operation, grind the wire cut surface to the final profile using the vendor furnished grinding cam. This cam shall be contoured such that the ground surface shall match the mating wire cut contour of the V₁ riser block.
4. Install K-3 refractory block V₁, Drawing D-185719, in the riser block wire cutting fixture W-804290.
5. Wire cut one end of the block to the 48-inch radius, to final dimensions shown on D-185719, sections S-5 and 2-2.
6. Following the wire cutting operation, grind the wire cut surface to the final profile using the vendor-furnished grinding cam.
7. Check fit-up of riser block V₁ with the ground contour of throat block F. The gap at this interface shall not exceed 1/32" at any joint.

8. Item 2 - Zirmul Refractory

1. Install the refractory lined grinding fixture, W-742111-B, on the grinding machine base. Shim as necessary to align top surface W of the base parallel to the plane of the grinding wheel.
2. Grind top surface A of the Zirmul Z ring, Drawing D-185717, to the final dimension and tolerances shown on Sketch PB-7285, Page 7.
3. Assemble the template support arm, post, and flatness template per W-742111-C and W-742149-C. Grind the bottom surface of the flatness template to a known clearance from the maximum height of Zirmul Surface A. No portion of Surface A shall be more than .020" plus known clearance below the edge of the template.

VII. PREPARATION FOR SHIPMENT

A. K-3 Refractory

The vendor shall package throat block F and riser block V₁ to ensure against damage during handling and transit. This protection shall include:

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DATE: July 9, 1985
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1. Sturdy wood crates.
2. Additional protection for corners and machined surfaces.
3. Use of pallets to permit loading and unloading with a forklift truck.
4. Provisions to minimize stresses on packed refractory.

B. Zirmul Refractory

1. Prepare the Zirmul assembly for shipping as shown on W-742111-B.
2. Provide additional protection for machined surface A and the exposed outside edge of the Zirmul.
3. Coat machined surfaces of the Zirmul fixture coll-on components per Du Pont Std L2A, Class 1.
4. Package the above fixture components to prevent damage from handling. This shall include use of wood crates.

C. Shipping

Ship all items on an exclusive truck with weather protection per Specification Page A.

VIII. INSPECTION BRIEF

A. Scope

1. This brief covers inspection of the refractory by the Du Pont Quality Assurance Representative (QA/R).
2. Du Pont reserves the right to inspect all items furnished on this order as outlined in the Preliminary and Final inspections. Any out-of-specification item will be rejected or repaired at no additional cost to Du Pont.
3. When ready for inspection, advise Quality Assurance Engineering, Scheduling Group, telephone (302) 366-3601. We would appreciate at least 48 hours notice when ready for inspection and we will make every effort to schedule the inspection visit per your request.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8976
REV:
DATE: July 9, 1985
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B. Preliminary Inspection

1. Inspection refractory on arrival at the vendor's shop, and that parts are free from damage.
2. Examine and approve set up of the Zirmul and K-3 refractory fixtures, prior to machining, per Paragraphs VI.A.1. and VI.B.1.

C. Final Inspection

1. Check dimensions of machined refractory and verify these are within the drawing tolerances. This shall include the following:
 - a. Inspect the ground surface of K-3 throat block F, and approve fit-up of this surface with riser block V₁ per Paragraph VI.A.4.
 - b. Witness and approve the inspection of the ground Zirmul surface per Paragraph VI.B.3.
2. Check and approve vendor's preparation for shipment per Paragraph VII.
3. Verify shipping information per Specification Page 1.

SPECIFICATION SKETCH

Date : January 3, 1989
Project 9S1780 - Savannah River Plant
Specification No. 3-8976
DuPont order AXC 8976-W
EN S-999-350-12-22
Zirmul Grinding
Vendor: Rock of Ages Corp.

Sketch JG-1288
ZIRMUL GRIND ELEVATION - MELTER #2

REF. DUPONT DRAWINGS W-742111 - ZIRMUL FIXTURE ASSEMBLY
D-186809A - FIXTURE BASE

J. D. Gutmann, Jr.
1/3/89

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

(TWX: 810-771-2671) TEL 803-725-6211 WU: AUGUSTA, GA)

VC: 04065

TO

914-651-4481
Zircar Products, Inc.
110 N. Main Street
Florida, NY 10921

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
1	29	86

ORDER NO.	Alt 3
AXC 341W	

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

MODIFY ORDER IN PART AS PER THE "LATEST" REVISED SPECIFICATION 3-341, REVISION 3, DATED 1/10/86 (SEE SUMMARY OF CHANGES PAGE "AA")

S350-185-18-6 Insulation Sleeves - Canyon Melter

S999-350-18-7 Insulation Sleeves - Canyon Melter

S999-350-18-6 Insulation Sleeves - Canyon Melter

No change in price which remains at 3/10,097 \$30,292.00

Per quotation letter dated 1/22/86 by B. A. Emmerich

TECHNICAL CONTACT: Paul Berry 302-366-3692

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		PRIORITY RATING/ACM EXECUTED BY	REQUISITION NUMBERS
ORDER NO.	AXC-341-W A3	EXECUTED BY E. Harbison	3-341
DEST		ISSUING POINT Wilm, DE	ORIGINATOR 1-0-0-
		BUYER	AMOUNT \$30,292.00

ITEM NO.	GENERAL LEDGER & COST CODE	
9S1780		
kj		

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT. DO NOT INSURE SHIPMENT.

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY
PROCUREMENT SPECIFICATION

FOR

(C)

ZIRCAR, TYPE AL-30
THERMAL INSULATOR PARTS FOR
RISER/HEATER

TABLE OF CONTENTS

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: AA

SUMMARY OF CHANGES PER REVISION #1

Page

1 Item III.A Drawing D-188787 changed to Rev. 12.

(N)

SUMMARY OF CHANGES PER REVISION #2

Page

B Added shipping instructions, Para II.

(N)

SUMMARY OF CHANGES PER REVISION #3

Page

A Title Change
1 Item I.A & I.B. Added "For Riser/Heater" to identification.
4 Item V.C. Tolerances of chemical composition changed and organic content changed weight (1" thick) deleted.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 8

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule:

A. Procurement Dates

1. Quotations are due on or before October 14, 1985.
2. Place order by October 31, 1985.

B. Shipping Dates

1. The complete set of Zircar insulation material for the canyon melter, Items 1 and 2, is the first priority and must be shipped by December 20, 1985.
2. Zircar Products, Inc., shall quote the earliest shipping date for the spare melter insulation, Item 3, in weeks after completing the Items 1 and 2 set.

II. SHIPPING INSTRUCTIONS

All items supplied by the vendor on this order to be shipped to:

Keller Technology
2320 Military Road
Tonawanda, NY 14151

Container should be marked:

ATTN: Frank Steinbruckner
For use on Du Pont Order AXC-6853W

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 1

I. IDENTIFICATION

- (C) A. EN S350-185-18-6 - Insulation for Riser/Heater - Canyon Melter
- (C) EN S999-350-18-7 - Insulation for Riser/Heater - Spare Parts
- (C) B. EN S999-350-18-6 - Insulation for Riser/Heater - Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, tolerances, surface appearance, inspection, and shipping of Zircar insulation material. This material will act as a thermal insulating material in the riser/pour spout section of the two melter vessels, for the defense waste processing facility.

B. Items by Vendor

Zircar Products, Inc., shall be responsible for the following:

1. Forming all parts to the dimensions given on Drawing D-188787.
2. Identifying all parts by suitable marking.
3. Preparing for shipping per Paragraph VI.
4. Submitting all Quality Assurance documents required per Paragraph VIII.

III. REFERENCE DOCUMENTS

A. Drawings for Fabrication

<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
D-188787	12	Zircar Details

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
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 DATE: January 10, 1986
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B. Drawings for Information

<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
W-748706	1	Riser - Pour Spout Assembly
W-748709	4	Riser - Pour Spout Heater Assembly
W-732366	19	DWPF Melter Section

IV. CONFIGURATION AND QUANTITIES

- A. Item 1 EN S350-185-18-6 - Insulation, Canyon Melter
 Item 2 EN S999-350-18-7 - Insulation, Canyon Melter Spares

Zircar Products, Inc., shall furnish two (2) complete sets of riser/pour spout insulating sleeves per the following:

<u>Drawing No.</u>	<u>Qty Reqd Per Assy</u>	<u>Qty Reqd For Spares</u>	<u>Total Qty Reqd</u>
D-188787-A	1	1	2
D-188787-B	1	1	2
D-188787-C	1	1	2
D-188787-D	1	1	2
D-188787-E	1	1	2
D-188787-F	1	1	2

- B. Item 3 - EN S999-350-18-6 - Insulation - Spare Melter

Zircar Products, Inc. shall furnish One (1) complete set of riser/pour spout insulating sleeves per the following:

<u>Drawing No.</u>	<u>Total Qty Reqd</u>
D-188787-A	1
D-188787-B	1
D-188787-C	1
D-188787-D	1
D-188787-E	1
D-188787-F	1

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 3

V. INSULATION REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, Georgia. This facility will prepare radioactive waste material for long-term storage by converting it into a stable borosilicate glass form.

2. Melter Configuration

The melter vessel, Drawing PV-184722, consists of a water jacketed shell and top head with nozzles for supporting auxiliary equipment.

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

B. Critical Tolerances and Quality

The insulation for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters:

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing the riser heater assembly. If the insulation fails, the entire melter must be removed from service.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 4

C. Material

All material furnished on this order shall be Zircar Type AL-30 alumina insulation. Material shall conform to the following properties:

		<u>Type AL-30</u>
(C)	Typical Composition (wt %)	83% Al ₂ O ₃ +10% -3% by wgt 15% SiO ₂ +3% -8% by wgt
	Density	Standard 30 lb/ft ³ (0.48 g/cm ³) varies from 25 to 42 lb/ft ³
(D)		
(C)	Organic Content	.05% carbon max

VI. PREPARATIONS FOR SHIPPING

The vendor shall package the insulation, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall include:

- A. Sturdy wood crates.
- B. Additional protection for corners.
- C. Use of pallets to permit loading and unloading with a forklift truck.
- D. Provisions to minimize stresses on packed insulation.
- E. Use of an exclusive truck with weather protection for shipment.

VII. INSPECTION

A. General

- 1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 5

instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.

2. See Paragraph VIII for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspection

- a. Verify that chemical properties are within the specified tolerances per Paragraph V.C.1.
- b. Inspect and approve parts for conformance to the following:
 - Drawing dimensions and tolerances per Paragraph IV.A.

VIII. QUALITY ASSURANCE DOCUMENTATION

- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the chemical analysis of each batch.
- C. Each certification page shall include the following information:

Zircar Type AL-30 Insulation
Project 9S1780
Du Pont Order AXC-341-W
EN S350-185-
EN S999-350-
EN S999-350-
- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 6

- E. One (1) set shall be sent by mail, immediately following acceptance by the QA/R per Paragraph VII.B.1.a., to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviere Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann

- F. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-341
REV: 3
DATE: January 10, 1986
PAGE: 7

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
NTRACT DE-AC09-76SR00001

(TWX: 810-771-2871)

TEL 803-725-8211

WU: AUGUSTA, GA)

VC: 02605

TO

(216) 248-7100
Metaullics Systems
31935 Aurora Road
Solon, OH 44139FURNISH
PACKING
LIST
FOR EACH SHIPMENT

DATE		
MO	DAY	YR
1	30	86

ORDER NO.	Alt 1
AXC 392W	

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.
DO-S-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11.

E-11-01 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

This alteration issued to correct pricing breakdown.

Should Read:	Total Price Material	\$293.16
	Tooling	\$200.00
	Total Firm Price	\$493.16

Balance of order remains the same.

TECHNICAL CONTACT: J. D. Gutmann, Jr. 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-392-W A1

EXECUTED BY

L. J. Kana

ISSUING POINT

XXXXXXX Wilm, DE

ORIGINATOR

1-0-0-

BUYER

AMOUNT

\$493.16

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

kj

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E.I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
12	11	85

ORDER NO.

AXC 392W

VC: 02605

TO

(216) 248-7100
Metallurgy Systems
Kennecott Corp.
31935 Aurora Rd., Dept. TR
Solon, OH 44139

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

1/15/86

1/15/86

PRIORITY

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
DD-4-1 (CERTIFIED FOR NATIONAL DEFENSE)
USE UNDER DPS REGULATION 11.

E-1-1 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

CASH TERMS

N30

VIA

F.O.B.

Solon, OH PPD & ADD

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

22	S350-185-18-5	Gaskets	
22	S999-350-18-5	Gaskets (Spare)	

Drawing D-188465-A	12	@ \$6.30 ea.
D-188465-B	12	@ \$6.68 ea.
D-188465-C	10	@ \$6.74 ea.
D-188465-D	10	@ \$7.00 ea.

Tooling \$50.00 each item

TOTAL FIRM PRICE: \$293.16

Per Spec. 3-392 Rev. 2 dated 11/25/85
attached and made part of this order.Per quote #85-361 R1 dated 11/27/85
by R. E. Gilbert

Inquiry A-3-392 dated 10/18/85

Ship to:

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

See Body

DEST

AXC-392-W

EXECUTED BY

L. J. Kana

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

1-0-0-

BUYER

AMOUNT

\$293.16

\$.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

kj

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30813
(TWX: 810-771-2871) TEL 803-725-8211 WU: AUGUSTA, GA)

VC: 02605

TO

(216) 248-7100
Metallics Systems
Kennecott Corp.
31935 Aurora Rd., Dept. TR
Solon, OH 44139FURNISH
PACKING

LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
12	11	85

ORDER NO.

AXC 392W

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE SHOWN ON EACH ITEM PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Print Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

1/15/86

1/15/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPE REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN
CERTAIN PRODUCT MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-6-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPE REGULATION 11.

6-11, IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPE REGULATION 1

CASH TERMS
N30

VA

FOA

Solon, OH PPD & ADD

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

See Page "B"

DU PONT INSPECTION IS REQUIRED ON THIS ORDER. IF INSPECTION DETAILS ARE NOT IN THE ATTACHED SPECIFICATION, YOU WILL RECEIVE A LETTER SHORTLY DESCRIBING THEM. TO SCHEDULE AN INSPECTION, CALL QUALITY ASSURANCE ENGINEERING AT 302-366-3601 AT LEAST 48 HOURS BEFORE INSPECTION IS NEEDED.

TECHNICAL CONTACT: J. D. Gutmann, Jr. 302-366-3929

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

See Body

DEST

AXC-392-W

EXECUTED BY

L. J. Kana

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

1-0-0-

BUYER

AMOUNT

\$0.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

kj

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PRICE. PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-392
REV: 2
DATE: November 25, 1985
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR

FIBERFRAX GASKETS

TABLE OF CONTENTS

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I. IDENTIFICATION	1
II. SCOPE	1
II. REFERENCE DOCUMENTS	1
IV. CONFIGURATION AND QUANTITIES	1
V. GASKET REQUIREMENTS	2
VI. PREPARATIONS FOR SHIPPING	3
VII. INSPECTION	3

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-392
REV: 2
DATE: November 25, 1985
PAGE: 8

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before October 28, 1985.
2. Place order by November 15, 1985.

B. Shipping Dates

1. The complete set of fiberfrax gaskets for the Canyon Melter, Item 1, is the first priority and must be shipped by January 15, 1986.
2. Metaulics Systems shall quote the earliest shipping date for the spare melter gaskets, Item 2, in weeks after completing the Item 1 set.

II. SHIPPING INSTRUCTIONS

- C) All items supplied by the vendor on this order to be shipped to:

Keller Technology
2320 Military Road
Tonawanda, NY 14151

Container should be marked:

ATTN: Frank Steinbruckner
For use on Du Pont Order AXC-6853W

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-392
REV: 2
DATE: November 25, 1985
PAGE: 1

I. IDENTIFICATION

<u>Item No.</u>	<u>Engineering No.</u>	<u>Description</u>
1	EN S350-185-18-5	Fiberfrax gaskets for canyon melter
2	EN S999-350-18-5	Fiberfrax gaskets for spare melter

II. SCOPE

A. General

This specification covers requirements for dimensions, inspection, and shipping Fiberfrax gaskets. These gaskets will be used on the riser/pour spout section of the melter, between the riser and cover.

B. Items by Vendor

Metaulics Systems shall be responsible for the following:

1. Furnishing all gaskets, Items 1 and 2 per paragraph IV.
2. Preparations for shipping per paragraph VI.

III. REFERENCE DOCUMENTS

A. Drawings for information

<u>Drawing No.</u>	<u>Rev No.</u>	<u>Description</u>
W-732366	19	Melter Section

IV. CONFIGURATION AND QUANTITIES

A. General

Metaulics Systems shall furnish two (2) complete sets of Fiberfrax gaskets.

- B. Item 1 - EN S350-185-18-5 - Fiberfrax Gaskets
Canyon Melter

One (1) set of Fiberfrax Gaskets per the following:

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-392
 REV: 2
 DATE: November 25, 1985
 PAGE: 2

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>	<u>Quantity Melter</u>	<u>For Spare</u>	<u>Total Quantity</u>
D-188465-A	1	Gasket	2 ✓	4	6
D-188465-B	1	Gasket	2 ✓	4	6
D-188465-C	1	Gasket	1 ✓	4	5
D-188465-D	1	Gasket	1 ✓	4	5

C. Item 2 - EN S999-350-18-5 - Fiberfrax Gaskets
 Spare Melter

One (1) set of Fiberfrax Gaskets per the following:
 (same as B, Item 1 above)

V. GASKET REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

B. MATERIAL

All gaskets furnished on this order shall be Fiberfrax 970-JH, 1/8 inch thick Fiberfrax 970 material without binder.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-392
REV: 2
DATE: November 25, 1985
PAGE: 3

VI. PREPARATIONS FOR SHIPPING

Metaulics Systems shall package the gaskets, subject to approval by Du Pont, to insure against damage during handling and transit.

VII. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Verify that all gaskets meet the drawing dimensions and tolerances.
2. Review and approve preparations for shipping.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
TRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30913
(TWX: 810-771-2871) TEL. 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
03	31	86

ORDER NO.

AXC 482W

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

VC: 00673

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

(716) 483-7200
Standard Oil Engineering Products
Refractories Division
901 New York Ave.
Falconer, NY 14733

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DCM IN
CERTAIN PRODUCTS, MATERIALS AND SERVICES HERETO TO ALL THIS ORDER
SOS-1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

S-11 IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

3/27/86

3/27/86

A ☒B ☐

CASH TERMS

N30

VA

FOA

See Below

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
1	S350-185-12-45	Melter - Canyon Fiberfrax Insul.	
1	S999-350-12-45	Melter - Canyon Fiberfrax Insul. (Spare)	
Per Spec. 3-482 dated 10/07/85 attached and made part of this order.			
Total Firm Price			\$3,161.57/Lot
This confirms verbal order placed 3/19/86 with Steve Graham by R. Bennett			
Per verbal quote dated 3/18/86 by Steve Graham			
Per quotation letter dated 3/3/86 by T. Nanula Per Inquiry A-3-482 dated 10/18/85			
Ship to:			

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

See Body

DEST

AXC-482-W

EXECUTED BY

L. J. Kana

ISSUING POINT

AUGUSTA, GA

XXXXXXXXXX

Wilm, DE

ORIGINATOR

1-0-0-0

BUYER

AMOUNT

\$3,161.57

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

bah

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER
E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001

SARASOTA RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL 803-725-8211 WIL: AUGUSTA, GA)

DATE		
MO	DAY	YR
03	31	86

ORDER NO.

AXC 482W

VC: 00673

(716) 483-7200
Standard Oil Engineering Products
Refractories Division
501 New York Ave.
Falconer, NY 14733

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PL.
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE
INVOICE.

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

3/27/86

3/27/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
DDC-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 1).

5-11 OR CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

CASH TERMS

N30

VIA

F.O.B.

See Below

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

SEE SPECIFICATION FOR SHIPPING
INSTRUCTIONS

DU PONT INSPECTION IS REQUIRED ON THIS ORDER. IF
INSPECTION DETAILS ARE NOT IN THE ATTACHED
SPECIFICATION, YOU WILL RECEIVE A LETTER SHORTLY
DESCRIBING THEM. TO SCHEDULE AN INSPECTION, CALL
QUALITY ASSURANCE ENGINEERING AT 302-366-3601 AT
LEAST 48 HOURS BEFORE INSPECTION IS NEEDED.

F.O.B.:

Items 1-4 & 6-7 New Carlisle, PA
Item 5 Niagara Falls, NY

Technical Contact: P. Berry (302) 366-3692

SHEET FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

See Body

DEST

AXC-482-W

EXECUTED BY

L. J. Kana

ISSUING POINT

AUGUSTA, GA

XXXXXXXXXX

Wilm, DE

ORIGINATOR

3-482

BUYER

AMOUNT

1-0-0-0

\$3,161.57

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

bah

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV:
DATE: October 7, 1985
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR FIBERFRAX INSULATION

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV:
DATE: October 7, 1985
PAGE: 8

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before November 15, 1985.

Ten copies of your proposal are required.

2. Place order by December 6, 1985.

B. Shipping Dates

1. The complete set of Fiberfrax Insulation material for the canyon melter, Item 1, is the first priority and must be shipped by January 17, 1986.
2. Carborundum shall quote the earliest shipping date for the spare melter insulation, Item 2, in weeks after completing the Item 1 set.

II. SHIPPING INSTRUCTIONS

Item 1 - Fiberfrax Insulation - Canyon Melter

On approval of final inspection, ship this item to:

Toledo Engineering Company, Inc.
8400 West Central Ave.
Sylvania, OH 43560

MARK: ATTN: J. W. Crawford
For Use on Du Pont Order AXC-6854-W

Item 2 - Fiberfrax Insulation - Spare Melter

On approval at final inspection, ship this item to:

Toledo Engineering Company, Inc.
8400 West Central Ave.
Sylvania, OH 43560

Mark: ATTN: J.W. Crawford
For use on Du Pont Order AXC-6854-W

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV:
DATE: October 7, 1985
PAGE: 1

I. IDENTIFICATION

<u>Item No.</u>	<u>Engineering No.</u>	<u>Description</u>
1	S350-185-12-45	Fiberfrax Insulation - Canyon Melter
2	S999-350-12-45	Fiberfrax Insulation - Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, and shipping fiberfrax insulation. This material will be the insulating barrier between the shell and refractory, in two glass melter vessels, for the Defense Waste Processing Facility (DWPF).

B. Items by Vendor

Carborundum shall be responsible for the following:

1. Furnishing all Fiberfrax Insulation material, Items 1 & 2 to meet the requirements in Paragraphs IV. A, B and C.
2. Preparations for shipping per Paragraph V.
3. Quality Assurance documents per Paragraph VI.

III. MATERIALS

Carborundum shall furnish the following materials:

<u>Item</u>	<u>Description</u>	<u>Quantity</u>
1	Fiberfrax Durablanket® 8 lb/ft ³ density	Two (2) rolls 24" wide x 25' long by 1/4" thick
2	Fiberfrax Durablanket® 8 lb/ft ³ density	Two (2) rolls 24" wide x 25' long by 1/2" thick
3	Fiberfrax Durablanket® 8 lb/ft ³ density	Two (2) rolls 24" wide x 25' long by 1-1/2" thick

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV:
DATE: October 7, 1985
PAGE: 2

4	Fiberfrax® Coating Cement Three (3) gallons
QF-180	
5	Fiberfrax® 970 JH Paper	Four (4) rolls 24" wide x
50' long by 1/8" thick
6	Fiberfrax® DSM-24
(LDS with 24% collodial)	1000 lbs - shipped in
5 gallon pails
7	Fiberfrax® Bulk Fiber,
washed	50 lbs

IV. INSULATION REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxilliary equipment installed.

Drawing D-185972 shows details of the shell configuration including final dimensions and tolerances of the machined surfaces.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV: .
DATE: October 7, 1985
PAGE: 3

B. Critical Tolerances and Quality

The insulation for this application must be manufactured to meet stringent requirements for material quality. This is dictated by unique operating conditions of DWPF melters:

1. Long-Term Reliability

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing refractory. If the insulation fails, the entire melter must be removed from service.

2. Glass Containment

The conducting glass must not migrate through the refractory to the vessel wall, as this would short out the electrode power supply. To prevent glass penetration, refractory blocks must fit precisely with each other, and all gaps at refractory joints must be held to an absolute minimum.

C. Material

All materials furnished on this order shall be of the highest quality obtainable.

V. PACKAGING AND SHIPPING

A. Packaging

The vendor shall package the materials to ensure against damage during handling and transit. This protection shall include:

1. Sturdy wood crates with weather protection.
2. An enclosed truck for shipment.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV:
DATE: October 7, 1985
PAGE: 4

VI. QUALITY ASSURANCE DOCUMENTATION

- A. Vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following statement:
- "This material conforms to the highest commercially acceptable manufacturing tolerances for this class of insulating material."
- C. Each certification page shall include the following information:
- Fiberfrax Durablanket® (Substitute description per Paragraph III)
Project: 9S1780
Du Pont Order AXC-482
EN S350-185-12-45 (Item 1 Material)
EN S999-350-12-45 (Item 2 Material)
- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.
- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VII.B.2 to:
- E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann
- F. The remaining sets shall be sent at time of shipment as follows:
1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 2. Two (2) sets, including signed inventory transmittal sheet, best way to:

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-482
REV:
DATE: October 7, 1985
PAGE: 5

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE - S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

PURCHASE ORDER
E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC05-76SF00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
2	14	86

ORDER NO.
Alt 1
AXC 618W

VC 04065

914-651-4481
Zircar Products, Inc.
110 N. Main Street
Florida, NY 10921

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE

Please mail 2 copies of your invoice to the above address
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on "OSR 1-1-1"

REQUIRED DELIVERY	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF THE REGULATION AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC N	DETAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER	DO NOT CERTIFY FOR NATIONAL DEFENSE USE UNDER DCS REGULATION	IF CERTIFIED FOR NATIONAL DEFENSE USE UNDER DCS REGULATION
		☒			☐

CASH TERMS	VIA	FOB
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ITEM NO.	QUANTITY	DESCRIPTION	PRICE
1	LotS350-185-19-3	Zircar Parts for DWPF Melter Drain Valve	
1	LotS999-350-19-3	Zircar Parts for DWPF Spare Melt. Drain Valve	
ADD TO ORDER: 3-618-21			
2	Lot G510-101-55-6	Zircar Parts for DWPF "Test Drain Valve"	
Per Spec. 3-618 Rev. 1 dated 01/03/86 attached and made part of this order.			
		Previous Price	\$14,204.00
		Alt. 1 Increase	\$189.00
		New Total Price	\$14,393.00
Per quotation letter dated 1/20/86 by B. Emmerich			
TECHNICAL CONTACT: E. S. Mazanek 302-366-4545			

SHEET	FINAL	PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
MARK AND SHIP AS FOLLOWS:		EXECUTED BY E. Garbison	3-618
TO E. I. DU PONT DE NEMOURS & COMPANY			ORIGINATOR
ORDER NO			1-0-0.
DEST	AXC-618-W A1	ISSUING POINT XXXXXXXXX Wilm, DE	BUYER
TEM NO	GENERAL LEDGER COST CODE		AMOUNT \$189.00

9S1780
ban

DIRECT ALL INQUIRIES TO THE ABOVE BUYER

PURCHASE EXEMPT FROM SOUTH CAROLINA SALE AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 119 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

JAN 23 1986

ZIRCAR PRODUCTS, INC., 110 North Main St., Florida, New York 10921 — (914) 651-4481

Telex 996606

January 20, 1986

Mr. Templeton
E.I. DuPont de Nemours & Co. Inc.
Materials & Logistics Dept.
Louviere Bldg.
Wilmington, DE 19898-7101

Dear Mr. Templeton:

Reference: DuPont Order AXC 618-W Alt. 1
Savannah River Plant
Project 9S1780

Please be advised that Revision 1 of above mentioned order has the following effect.

Part number G & H per dwg. D-189459 revision 11 were added, the cost of these items are:

G - \$107.00
H - \$82.00

We entered these parts onto ZIRCAR order number 85-1911 and have already manufactured and shipped them on January 14, 1986.

The rest of these items are on ZIRCAR order number 85-1771 and we are projecting a March 12, 1986 ship date to Keller Technologies. We have referenced AXC 618-W on both orders to avoid any confusion.

Should you have any additional questions or comments, please don't hesitate to contact me at your earliest convenience.

Yours very truly,

ZIRCAR Products, Inc.

Blake A. Emmerich
Sales Manager

BAE/ad

SPECIFICATION

*DWPF
All parts ordered
OK L.F.H.
COMPLETE*

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-618
REV: 2
DATE: January 20, 1986
PAGE: 1

S350-185-19-3	1 Lot	Zircar® Parts for DWPF Melter Drain Valve
S999-350-19-3	1 Lot	Zircar® Parts for DWPF Spare Melter Drain Valve
(C) G510-101-55-6	2	Zircar® Parts for DWPF Test Drain Valve*

I. GENERAL

Manufacturer is to provide Zircar® parts in accordance with the following Du Pont drawings and in the quantities indicated:

<u>Drawing No</u>	<u>Part</u>	<u>Rev No</u>	<u>Qty</u>
D-189458	A ✓ DWPF	0	2
D-189458	B ✓	0	2
D-189458	C ✓	0	2
D-189458	D ✓	0	2
D-189459	G	11	1*
D-189459	H	11	1*
D-189679	A ✓	0	2
D-189679	B ✓	0	2
D-189682	A ✓	2	2
D-189682	B ✓	2	2
D-189682	C ✓	2	2
D-198761	A ✓	0	2
D-808578	A ✓	0	2
D-808579	A ✓	0	2
D-808579	B ✓	0	2
D-808579	C ✓	0	2
D-808579	D ✓	0	2
D-808579	E ✓	0	2
D-808579	F ✓	0	2

*These parts are to be shipped by January 15, 1986, to:

Keller Technology Corporation
4320 Military Road
Tonawanda, NY 14151
ATTN: F. Steinbruckner

and marked "For Use on Du Pont Order AXC-8129-W". Inspection by a Du Pont QA/R is waived for these parts only.

The costs for these parts are to be charged to SRP account #8452-4D-03Y.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 951780
SPEC: 3-618
REV: 2
DATE: January 20, 1986
PAGE: 2

II. MATERIAL OF CONSTRUCTION

Material of construction to be type AL-30 Zircar® as manufactured by Zircar Products, Inc.

III. DIMENSIONS AND TOLERANCES

The parts are to be manufactured to the dimensions and tolerances specified on the above drawings. No deviations are acceptable without Du Pont approval.

IV. INSPECTION

Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment. The QAFR is to check the parts for dimensional conformance to Du Pont drawings only. Notify Quality Assurance Engineering Scheduling at least 48 hours before inspection is required by calling (302) 366-3601.

V. PACKAGING FOR SHIPMENT

All parts are to be adequately packaged to prevent breakage and water damage in shipment.

VI. SHIPMENT INSTRUCTIONS

The parts are to be shipped to the following vendor and marked "For Use on Du Pont Order AXC-6850-W:

(LATER)

VII. IDENTIFICATION

All parts are to be labeled with their Du Pont part number with low chloride ink that is not detrimental to the Zircar®.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
01	23	86

ORDER NO.
AXC 755W

TO
Carborundum Co.
Insulation Div.
P.O. Box 808
Niagara Falls, NY 14302

**FURNISH
PACKING
LIST**
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY DATE 2/17/86	PROMISED SHIPPING DATE	<p>YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS TO 800.1</p> <p>DETERMINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FULFILL THIS ORDER</p> <p>DO-E-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1)</p> <p>A ☒ B ☐</p>
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CASH TERMS: _____ VIA: _____ FOB: _____

ITEM NO	QUANTITY	DESCRIPTION	PRICE
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70 lbs999-350-13-1 Insulation-Milled Fiberfrax-Spare Melter

5.98/lb.

Service Charge for Physical & Chemical Analysis \$400.00
Per Spec. 3-755 dated 01/10/86 attached and made part of this order.

Total Firm Price \$1,111.20

Ship to:
Keller Technology
2320 Military Road
Tonowanda, NY 14151
ATTN: Mr. Frank Steinbrucker (FOR USE ON DU PONT ORDER AXC-6335-W)

PER ACKNOWLEDGEMENT
DATED 4/3/86

DU PONT INSPECTION IS REQUIRED ON THIS ORDER. IF INSPECTION DETAILS ARE NOT IN THE ATTACHED SPECIFICATION, YOU WILL RECEIVE A LETTER SHORTLY DESCRIBING THEM. TO SCHEDULE AN INSPECTION, CALL QUALITY ASSURANCE ENGINEERING AT 302-366-3601 AT LEAST 48 HOURS BEFORE INSPECTION IS NEEDED.

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY ORDER NO See Body DEST AXC-755-W	<p>SHEET ☐ FINAL ☐</p> <p>PRIORITY RATING / ACM EXECUTED BY</p> <p>EXECUTED BY E. Harbison</p> <p>ISSUING POINT XXXXXXXXXX Wilm, DE</p>	<p>REQUISITION NUMBERS 3-755</p> <p>ORIGINATOR 1-0-0-</p> <p>BUYER AMOUNT \$1,111.20 \$5.00</p>
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ITEM NO	GENERAL LEDGER & COST CODE	DIRECT ALL INQUIRIES TO THE ABOVE BUYER.
9S1780	bah	<p>PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION</p> <p>APPROVED FOR DU PONT</p>

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

JUN 02 1986

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
01	23	86

ORDER NO.

AXC 755W

TO

Carborundum Co.
Insulation Div.
P.O. Box 808
Niagara Falls, NY 14302**FURNISH
PACKING
LIST**

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

3/17/86

3/17/86

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC.
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DO-E-11 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11)

E-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

N/30

VIA

UPS

FOB

Niagara Falls, N. Y.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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THIS IS AN UNPRICED ORDER. IT IS IMPERATIVE THAT YOU FURNISH US WITH A FORMAL QUOTATION BY 2/10/86 showing prices, cash and FOB point (include terms of payment for freight), dates required drawings will be submitted (if applicable), promised shipping date, and any other charges pertaining to this order. FAILURE TO PROVIDE THIS INFORMATION IN A TIMELY MANNER WILL DELAY PAYMENT OF YOUR INVOICE AS THE PURCHASE ORDER CANNOT BE PRICED AND FORWARDED TO ACCOUNTS PAYABLE UNTIL THIS DATA IS RECEIVED IN THIS OFFICE.

You are authorized to proceed to engineer, fabricate and ship the material or equipment on this order providing:

1. The terms and conditions on the reverse side of this order are acceptable to you.
2. Shipment can be made as requested by Du Pont.

70 lb 5350-185-13-1

Insulation - Milled
Fiberfrax-Canyon Melter

5.00/lb.

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

3-755

ORDER NO.

See Body

EXECUTED BY
E. Harbison

ORIGINATOR

DEST

AXC-755-W

ISSUING POINT

XXXXXX Wilm, DE

BUYER

AMOUNT

\$1,111.20

\$-00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

bah

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO E.I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

E.I. DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT. DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-755
REV:
DATE: January 10, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR MILLED FIBERFRAX INSULATION

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V. PACKING & SHIPPING	2
VI. QUALITY ASSURANCE DOCUMENTATION	3

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-755
REV:
DATE: January 10, 1986
PAGE: B

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility Program Schedule.

A. Procurement Dates

Fabrication released upon placement of order.

B. Shipping Dates

1. The completed order must be shipped by Feb. 28, 1986.

II. SHIPPING INSTRUCTIONS

Material supplied on this order should be sent to:

Keller Technology
2320 Military Road
Tonawanda, NY 14151

ATTN: Mr. Frank Steinbruckner
Marked: "For Use On Du Pont Order AXC-6853-W".

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-755
REV:
DATE: January 10, 1986
PAGE: 1

I. IDENTIFICATION

<u>Item No.</u>	<u>Qty</u>	<u>Engineering No.</u>	<u>Description</u>
1	70 lbs	S350-185-13-1	Milled Fiberfrax - Canyon Melter
2	<u>70 lbs</u>	S999-350-13-1	Milled Fiberfrax - Spare Melter

TOTAL: 140 lbs

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, and shipping milled fiberfrax material. This material will provide an insulating barrier between the annular tubes of the glass frit feed tubes for the two glass melter vessels, for the Defense Waste Processing Facility (DWPF).

B. Items by Vendor

Carborundum shall be responsible for the following:

1. Furnishing approximately 140 lbs of milled fiberfrax material.
2. Providing adequate shipping preparations.
3. Providing Quality Assurance documents per Paragraph VI.

III. MATERIALS

A. Carborundum shall furnish the following materials:

Fiberfrax Milled Fiber (high purity).

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-755
REV:
DATE: January 10, 1986
PAGE: 2

B. Typical Chemical Analysis

Al_2O_3 - 47% min. to 53% max.
 SiO_2 - 47% min. to 53% max.
 Fe_2O_3 - Trace
 TiO_2 - Trace
 K_2O - Trace
 Na_2O - Trace
Leachable Chlorides <10 ppm

C. Typical Physical Properties:

Color	White to Light Gray
Continuous Use Limit	1260°C (2300°F)
Melting Point	1260°C (2300°F) 1790°C (3260°F)
Approximate Shipping Density	817 kg/m ³ (51 lb/ft ³)
Fiber Surface Area	0.5 m ² /g
Fiber Diameter	2-3 microns (mean)
Fiber Length	14 microns (mean)
Specific Gravity	2.73 g/cm ³
Specific Heat at 1093°C (2000°F)	1130 J/kg °C (.27 Btu/lb°F)
Thermal Conductivity at 538°C (1000°F) Mean Temperature	.187/m °C (1.3 Btu-in/hr ft ² °F)

IV. INSULATION REQUIREMENTS

The application to which this insulation will be placed is to maintain long term life of equipment in order to minimize downtime for maintenance.

V. PACKAGING AND SHIPPING

A. Packaging

The vendor shall package the materials to ensure against damage during handling and transit. This protection shall include:

1. Sturdy wood crates or suitable substitute for weather protection.
2. An enclosed truck for shipment.
3. Each packaged container shall bear the identifying lot no.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-755
REV:
DATE: January 10, 1986
PAGE: 3

VI. QUALITY ASSURANCE DOCUMENTATION

- A. Vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
- B. Each set of certification data shall include the following:
- Lot number of material
 - Chemical analysis of lot number
 - Physical analysis of lot number
- C. Each certification page shall include the following information:
- Fiberfrax Milled Fiber
Project: 9S1780
Du Pont Order AXC-755
EN S350-185-13-1 (Item 1 Material)
EN S999-350-13-1 (Item 2 Material)
- D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.
- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VII.8.2 to:
- E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann
- F. The remaining sets shall be sent at time of shipment as follows:
1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 2. Two (2) sets, including signed inventory transmittal sheet, best way to:

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-755
REV:
DATE: January 10, 1986
PAGE: 4

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE - S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2671) TEL 803-725-6211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
12	02	86

ORDER NO.
Alt 1
AXC 1716W

VC: 04065

TO

914-651-4481
Zircar Products, Inc.
110 N. Main Street
Florida, NY 10921

FURNISH
PACKING

LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-12

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
DD-6-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1)

8-1-1 ON CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Modify order in part, to include three (3) additional parts, as per the "latest" revised specification Rev.#1 and Du Pont detail drawings sent to vendor under separate cover letter.

THIS IS AN UNPRICED ALTERATION. IT IS IMPERATIVE THAT YOU NOTIFY US OF ANY CHANGE IN PRICE BY 12/23/86. PRICES MUST REFLECT LIST, DISCOUNT AND NET FOR EACH ITEM. In addition, you must advise if any change in the date of submission of approval and/or final drawings (if required) and/or shipping date will occur as a result of this alteration. All terms and conditions established in our original order, except as modified herein, shall continue in full force and effect.

FAILURE TO PROVIDE THIS INFORMATION (EVEN IF NO CHANGE) IN A TIMELY MANNER WILL DELAY PAYMENT OF YOUR INVOICE AS THE ALTERATION CANNOT BE PRICED AND FORWARDED TO ACCOUNTS PAYABLE UNTIL THIS DATA IS RECEIVED IN THIS OFFICE.

1 S350-185-18-8 Insulation Parts
Canyon Melter

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

EXECUTED BY

A. M. Lawrence

ORIGINATOR

DEST

AXC-1716-W A1

ISSUING POINT

XXXXXXXXXX Wilm. DE

BUYER

AMOUNT

\$.

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE A/B BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA 3 AND USE TAXES PURSUANT TO EXEMPT CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30613
(TWX: 810-771-2871) TEL 803-725-8211 WL: AUGUSTA, GA)

DATE		
MO	DAY	YR
12	02	86

ORDER NO.
AXC 1716W

VC: 04063

TO

914-651-4481
Zircar Products, Inc.
110 N. Main Street
Florida, NY 10921

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE SHOWN ON EACH ITEM, PACKAGE, CORRESPONDING INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

These Products Materials and/or Services Subject to Conditions and Instructions Listed on CSR 1-12

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPE REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.
DO-S-1 IDENTIFIED FOR NATIONAL DEFENSE USE UNDER DPE REGULATION 11.

DO-S-1 IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPE REGULATION 11.

CASH TERMS

VA

FOE

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
1	S999-350-18-8	Insulation Parts Canyon Melter (Spares)	
1	S999-350-18-9	Insulation Parts Canyon Melter (Spare)	
<p>Per Spec. 3-1716 Rev. 1 dated 11/21/86 attached and made part of this order.</p> <p>TECHNICAL CONTACT: J. Scafaria 302-366-4510</p> <p>ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.</p>			

<p>MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY</p>		<p>PRIORITY RATING/ACM EXECUTED BY</p>	<p>REQUISITION NUMBERS</p>
<p>ORDER NO.</p>		<p>EXECUTED BY</p>	<p>9S1780 mfc 3-1716</p>
<p>DEST</p>		<p>A. M. Lawrence</p>	<p>ORIGINATOR</p>
<p>AXC-1716-W A1</p>		<p>ISSUING POINT</p>	<p>1-0-0</p>
<p>ITEM NO. GENERAL LEDGER & COST CODE</p>		<p>XXXXXXXXXX Wilm, DE</p>	<p>BUYER AMOUNT</p>
			<p>\$.0</p>
<p>DIRECT ALL INQUIRIES TO THE ABO BUYER.</p>			
<p>PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPT CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PRICE WITHOUT PAYING TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.</p>			
<p>APPROVED FOR DU PONT</p>			

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION

FOR

ZIRCAR, TYPE AL-30
THERMAL INSULATOR PARTS FOR
RISER/HEATER

TABLE OF CONTENTS

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
PAGE: 8

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule:

A. Shipping Dates

1. The complete set of Zircar insulation material for the canyon melter, Items 1 and 2, is the first priority and must be shipped by January 15, 1987.
2. Zircar Products, Inc., shall quote the earliest shipping date for the spare melter insulation, Item 3, in weeks after completing the Items 1 and 2 set.

II. SHIPPING INSTRUCTIONS

All items supplied by the vendor on this order to be shipped to:

Keller Technology
2320 Military Road
Tonawanda, NY 14151

Container should be marked:

ATTN: Frank Steinbruckner
For use on Du Pont Order AXC-6853W

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
PAGE: 1

I. IDENTIFICATION

- A. EN S350-185-18-8 - Insulation Parts for Riser/Heater - Canyon Melter
EN S999-350-18-8 - Insulation Parts for Riser/Heater - Spare Parts
- B. EN S999-350-18-9 - Insulation Parts for Riser/Heater - Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, tolerances, surface appearance, inspection, and shipping of Zircar insulation material. This material will act as a thermal insulating material in the riser/pour spout section of the two melter vessels, for the defense waste processing facility.

B. Items by Vendor

Zircar Products, Inc., shall be responsible for the following:

1. Forming all parts to the dimensions given on Du Pont drawings.
2. Identifying all parts by suitable marking.
3. Preparing for shipping per Paragraph VI.
4. Submitting all Quality Assurance documents required per Paragraph VIII.

III. REFERENCE DOCUMENTS

A. Drawings for Fabrication

<u>Dwg No</u>	<u>Rev</u>	<u>Description</u>
819502	1	Zircar Details
819588	0	Zircar Details
819589	1	Zircar Details

(C)
(C)
C = Change N = New
8044W/lmm R1/clb

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-1716
 REV: 1
 DATE: November 21, 1986
 PAGE: 2

IV. CONFIGURATION AND QUANTITIES

- A. Item 1 EN S350-185-18-8 - Insulation, Canyon Melter
 Item 2 EN S999-350-18-8 - Insulation, Canyon Melter Spares

Zircar Products, Inc., shall furnish two (2) complete sets of riser/pour spout insulating parts per the following:

<u>Drawing No.</u>	<u>Qty Reqd Per Assy</u>	<u>Qty Reqd For Spares</u>	<u>Total Qty Reqd</u>
D-819502-A	1	1	2
D-819502-B	1	1	2
D-189502-C	1	1	2
D-819588-A	1	1	2
D-819588-B	1	1	2
D-819588-C	1	1	2
D-819588-D	1	1	2
D-819588-E	2	2	4
D-819588-F	2	2	4
D-819588-G	1	1	1
D-819589-A	1	1	2
D-819589-B	1	1	2
D-819589-C	1	1	2
D-819589-D	1	1	2

- B. Item 3 - EN S999-350-18-9 - Insulation - Spare Melter

Zircar Products, Inc. shall furnish One (1) complete set of riser/pour spout insulating parts per the following:

<u>Drawing No.</u>	<u>Total Qty Reqd</u>
D-819502-A	1
D-819502-B	1
D-819502-C	1
D-819588-A	1
D-819588-B	1
D-819588-C	1
D-819588-D	1
D-819588-E	2
D-819588-F	2
D-819588-G	1
D-819589-A	1
D-819589-B	1
D-819589-C	1
D-819589-D	1

C = Change N = New
 8044W/1mm R1/clo

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
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V. INSULATION REQUIREMENTS

A. Material

All material furnished on this order shall be Zircar Type AL-30 alumina insulation. Material shall conform to the following properties:

	<u>Type AL-30</u>
Typical Composition (wt %)	83% Al_2O_3 +10% -3% by wgt 15% SiO_2 +3% -8% by wgt
Density	Standard 30 lb/ft ³ (0.48 g/cm ³) varies from 25 to 42 lb/ft ³
Organic Content	.05% carbon max

VI. PREPARATIONS FOR SHIPPING

The vendor shall package the insulation, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall include:

- A. Sturdy wood crates.
- B. Additional protection for corners.
- C. Use of pallets to permit loading and unloading with a forklift truck.
- D. Provisions to minimize stresses on packed insulation.
- E. Use of an exclusive truck with weather protection for shipment.

VII. INSPECTION

A. General

- 1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
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instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.

2. See Paragraph VIII for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

1. Preliminary Inspection

- (C)
- a. Verify that chemical properties are within the specified tolerances per Paragraph V.A. by vendor certification.
 - b. Inspect and approve parts for conformance to the following:
 - Drawing dimensions and tolerances per Paragraph IV.A.

VIII. QUALITY ASSURANCE DOCUMENTATION

- (C)
- A. The vendor shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.
 - B. Each set of certification data shall include a certificate of conformance for each batch.
 - . Each certification page shall include the following information:

Zircar Type AL-30 Insulation
Project 9S1780
Du Pont Order AXC-1716-W
EN S350-185-8
EN S999-350-8
EN S999-350-9
 - D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.

C = Change N = New
8044W/1mm R1/clb

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
PAGE: 5

- E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VII.8.1.a., to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J. Scafaria

- F. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1716
REV: 1
DATE: November 21, 1986
PAGE: 6

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE-S. B. Hicks

- G. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

C = Change
8044W/1mm

N = New
R1/c1b

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

 J.S. DEPARTMENT OF ENERGY
 CONTRACT DE-AC09-78SR00001

 SAMANNAH RIVER PLANT
 P.O. BOX 117 (13) Augusta, GA 30913
 (TWX: 810-771-2871) TEL 803-725-8211 WL: AUGUSTA, GA)

VC: 02605

TO

 (216) 248-7100
 Metallics Systems
 31935 Aurora Road
 Solon, OH 44139

 FURNISH
 PACKING

LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
1	28	87

 ORDER NO. Alt 5
 AXC6851W

 ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAIN
 SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE &
 INVOICE.

 Please mail 2 copies of your invoice
 to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

 PROMISED SHIPPING
 DATE

 YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD IN
 OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
 DD-8-1 (CERTIFIED FOR NATIONAL DEFENSE
 USE UNDER OPS REGULATION 1)

E-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

FIBERFRAX INSULATION CANYON MELTER & SPARE MELTER

 MODIFY ORDER IN PART, IN ACCORDANCE WITH THE ATTACHED
 REVISED SPECIFICATION (SEE "SUMMARY OF CHANGES",
 PAGE AA) REV. 5. (ADDED COLLAR & GASKET DETAIL
 DRAWINGS.)

 Per Spec. 3-6851 Rev. 5 dated 10/29/86
 attached and made part of this order.

 PREV. TOTAL \$255,505.60
 ALT. #5 INCR. 10,595.00
 NEW TOTAL \$266,100.60

 TECHNICAL CONTACT: J. D. Gutmann 302-366-3929 PER QUOTE DATED
 1/16/87 BY RONALD
 ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME. GILBERT.
SHEET ☐ FINAL
 MARK AND SHIP AS FOLLOWS:
 TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

DEST

AXC-6851-W A5

PRIORITY RATING / ACM EXECUTED BY

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXXXXXXXXX Wilm, DE

REQUISITION NUMBERS

 951780
 3-6851

c10

ORIGINATOR

1-0-C

BUYER

AMOUNT

\$0.0

ITEM NO.

GENERAL LEDGER & COST CODE

 DIRECT ALL INQUIRIES TO THE ABC
 BUYER.

 PURCHASE EXEMPT FROM SOUTH CAROLINA SA
 AND USE TAXES PURSUANT TO EXEMPT
 CERTIFICATE NO 2139 WHICH AUTHORIZES E.
 PONT DE NEMOURS & COMPANY TO PURCHASE
 TANGIBLE PERSONAL PROPERTY AT WHOLESALE
 PAY TAX WHERE APPLICABLE DIRECTLY TO THE SC
 CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY

PROCUREMENT SPECIFICATION
FOR
FIBERFRAX FORMED SHAPES

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E.I. DU PONT DE NEMOURS & CO.
WILMINGTON, DELAWARE
ENGINEERING DEPARTMENT

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29, 1986
PAGE: AA

SUMMARY OF CHANGES PER REV. 2

<u>Page</u>	<u>Paragraph</u>	
2	III.B	CB&I drawings supersede original Du Pont drawings as shown.

SUMMARY OF CHANGES PER REVISION 3

<u>Page</u>	<u>Paragraph</u>	
8	2	Added shipping instructions.

SUMMARY OF CHANGES PER REVISION 4

<u>Page</u>	<u>Paragraph</u>	
8	I.B	Revised shipping date.
1	II.B.2	Added requirement for grinding top and bottom head liners.
2	III.B	Minor changes to description.
3	IV.B.1	Added modified bottom corner liner.
3	IV.B.2	Added requirement for grinding the bottom and top head liners.
4	IV.D	Added modified bottom corner liner.
7	V.D	Added reference to two bottom corner liner thicknesses.
7	VI.B	Added identification requirements.
9	VIII.B.3	Added requirement for dimensional data.

(N)

SUMMARY OF CHANGES PER REVISION 5

8	I.B	Added Paragraph 3
2	III.A	Added Drawings D-188792 & D-188465
4	IV.B.1	Added collar, Drawing D-188792, gaskets, Drawing D-188465, and increased quantity of the riser sleeve, D-185716-C, from 2 to 3
5	IV.D	Added collar, drawing D-188792, and gaskets, Drawing D-188465

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29, 1986
PAGE: 8

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before January 15, 1984. Ten copies of your proposal are required.
2. Place order by April 30, 1985.

B. Shipping Dates

1. The complete set of fiberfrax insulation material for the Canyon Melter, Item 1, is the first priority and must be shipped by November 15, 1986.
2. Metaulics Systems shall quote the earliest shipping date for the spare melter insulation, Item 2, in weeks after completing the Item 1 set. The same forming fixtures will be used for both sets.
- (N) 3. Two collars, D-188792-A, and all gaskets, D-188465-B are first priority and must be shipped by February 20, 1987. The remaining one collar and the additional riser sleeves, D-185716-C, must be shipped by May 29, 1987.

II. SHIPPING INSTRUCTIONS

Ship to:

Toledo Engineering Co., Inc.
8400 West Central Ave.
Sylvania, OH 43560

ATTN: Mr. Dan Partin

Marked: "For Use On Du Pont Order No. AXC-6854-W"

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29, 1986
PAGE: 1

I. IDENTIFICATION

<u>Item No.</u>	<u>Engg. No. (EN)</u>	<u>Description</u>
1	S350-185-12-40	Fiberfrax Insulation - Canyon Melter
2	S999-350-12-40	Fiberfrax Insulation - Spare Melter

II. SCOPE

A. General

This specification covers requirements for physical and chemical properties, dimensions, tolerances, surface appearance, inspection, and shipping Fiberfrax formed shapes. This material will be the insulating barrier between the shell and refractory, in two glass melter vessels, for the Defense Waste Processing Facility (DWPF).

B. Items by Vendor

Metaulics Systems shall be responsible for the following:

1. Furnishing all formed shapes, Items 1 through 3, to meet the requirements in Paragraphs IV and V. This includes tooling to produce the cylindrical shape, D-185716-C.
2. Grinding top and bottom head liners, D-185715-A and D-185716-A, to final drawing tolerances. This includes design and fabrication of a grinding fixture.
3. Assembling the bottom head and bottom corner shapes for fit-up per Paragraph V.D.
4. Preparations for shipping per Paragraph VI.
5. Quality Assurance documents per Paragraph VIII.

SPECIFICATION

PLANT: SAVAN
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29,
PAGE: 2

C. Items by Others

1. Du Pont shall furnish the forming and trim fixtures listed in Paragraph III B.
2. The riser sleeves, D-185716-C, shall be machined to the final configurations, D-185716 B & D, by Toledo Engineering.
3. All other materials shown on Drawings W-737669 and W-736915 will be furnished by others.
4. Toledo Engineering Company shall assemble all insulation and refractory in the melter shell and top head.

III. REFERENCE DOCUMENTS

A. Drawings for Fabrication

	<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
	D-185715	2	Fiberfrax Details Sheet 1
	D-185716	7	Fiberfrax Details Sheet 2
(N)	D-188792	1	Collar
(N)	D-188465	5	Gaskets

B. Forming and Trim Fixture Drawings

The following fixtures will be furnished by Du Pont for forming the top and bottom head liners.

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
44993-1	0	Bottom Head Forming Fixture Assy
44993-2	0	Bottom Head Trim Fixture Assy
44993-4	1	Bottom Head Forming Fixture
44993-5	0	Bottom Head Forming Fixture
44993-3	0	Bottom Head Trim Fixture
44993-16	1	Sidewall Forming & Trim Fixture Assy.
44993-17	1	Sidewall Forming & Trim Fixtures

N = New
903lw/jel

R5/ktg

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29, 1986
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<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
44993-6	0	Top Head Forming Fixture Assy
44993-7	0	Top Head Forming Fixture Assy
44993-9	1	Top Head Forming Fixture Base
44993-10	0	Top Head Forming Fixture Top
44993-8	1	Top Head Trim Fixture

C. Drawings for Information

The following drawings are submitted for information only:

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>
W-732366	19	DWPF Melter Section
D-186204	22	Top Head Details - Sheet 1
D-185972	13	Melter Shell - Sheet 2
W-737245	0	Refractory Layout Dimension Documentation - Sheet 1
W-736916	0	Refractory Layout Dimension Documentation - Sheet 2
W-737669	0	Refractory Assembly - Sheet 1
W-736915	0	Refractory Assembly - Sheet 2

IV. CONFIGURATION AND QUANTITIES

A. General

Metaulics Systems shall furnish two complete sets of Fiberfrax formed shapes, plus extra shapes and material samples, per Paragraphs IV.B through IV.D.

SPECIFICATION

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B. 1. Item 1 - EN S350-185-12-40 - Fiberfrax Insulation - Canyon Melter

One set of Fiberfrax liners per the following:

	<u>Dwg. No.</u>	<u>Rev.</u>	<u>Description</u>	<u>Qty</u>
	D-185715-A	2	Bottom Head Liner	1
	D-185715-B	2	Bottom Corner Liner	12 Segments
	D-185716-A	7	Top Head Liner	1
(C)	D-185716-C	7	Riser Sleeve	3
	D-185715-B	2	Bottom Corner Liner - Modified to 1.25 inches thick	12 Segments
(N)	D-188792-A	1	Collar	1
(N)	D-188465-B	5	Gaskets	8

2. Metaulics Systems shall grind the bottom head and top head liners to final drawing tolerances.

C. Item 2 - EN S999-350-12-40 - Fiberfrax Insulation - Soare Melter

(C) One set of Fiberfrax liners, gaskets, and collar per previous Paragraph IV.8.1.

D. Item 3 - Extra Liners

The following extra liners shall be furnished with the Item 1 set. These quantities are in addition to those required for Items 1 and 2, and will provide back-up material for contingencies, as well as material for chemical and physical property tests.

<u>Dwg. No.</u>	<u>Description</u>	<u>Qty</u>
D-185715-A	Bottom Head Liner	1
D-185715-B	Bottom Corner Liner	8 Segments

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6851
REV: 5
DATE: October 29, 1986
PAGE: 5

	<u>Dwg. No.</u>	<u>Description</u>	<u>Qty</u>
	D-185716-A	Top Head Liner	1
	D-185716-C	Riser Sleeve	1
	D-185715-B	Bottom Corner Liner - Modified to 1.25 inches thick	8 Segments
(N)	D-188792-A	Collar	1
(N)	D-188465-B	Gaskets	8

V. INSULATION REQUIREMENTS

A. Glass Melter Description

1. Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

2. Melter Configuration

Drawing W-732366 shows the melter assembly with internal insulation, refractory lining, and all auxiliary equipment installed.

Drawings D-185972 and D-186204 show details of the shell and top head configurations, including final dimensions and tolerances of the machined surfaces.

3. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

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B. Critical Tolerances and Quality

The insulation for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters:

1. Long-Term Reliability

After the melting operation becomes radioactive, the melter must be operated and maintained by remote control for a period of years. There are no provisions for repairing or replacing insulation. If the insulation fails, the entire melter may have to be removed from service.

2. Glass Containment

The conducting glass must not migrate through the refractory and insulation to the vessel wall, as this would short out the electrode power supply. The Fiberfrax liner is the final barrier between refractory and melter shell for the bottom and riser areas. The integrity of this barrier must be maintained to prevent glass penetration.

C. Material

1. General

All material furnished on this order shall be T-30R Fiberfrax and shall meet the following requirements:

- a. Configuration and quantities per Paragraph IV.
- b. Chemical and physical properties per Paragraph V.C.2.
- c. Assembled tolerances per Paragraph V.D.

SPECIFICATION

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2. Properties

a. Ingredients

Chemical composition of the fiber, prior to adding the binder, shall meet the following weight percentage values:

Aluminum Oxide (Al_2O_3)	44 - 52
Silicon Dioxide (SiO_2)	48 - 56
Sodium Oxide Na_2O	0.2 - 0.5
Boron Oxide (B_2O_3)	0.15 maximum
Ferric Oxide (Fe_2O_3)	0.02 - 0.10
Trace Inorganics	0.3 maximum

b. The following physical properties shall be determined for information only.

- 1) Density in lbs/ft^3
- 2) Cold crushing strength in lbs/in^2

3. Verification of Material Properties

Du Pont shall select one bottom corner segment, D-185715-B, for material verification. One half of this segment shall be used by Metaulics Systems to verify chemical and physical properties. The other half shall be retained by Du Pont for independent tests.

The results of Metaulics System's tests shall be submitted to Du Pont per Paragraph VIII.

D. Assembled Tolerances

The 1-1/8 and 1-1/4 inch thick bottom corner liner segments, D-185715-B, shall be temporarily assembled at Metaulics Systems with the bottom head liner, D-185715-A, to check fit-up. Maximum gap shall not exceed 1/16 inch. The outside diameter of the assembled bottom head and bottom corner liner configurations shall be measured and recorded.

SPECIFICATION

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VI. PREPARATIONS FOR SHIPPING

- A. Metaulics Systems shall package the insulation, subject to approval by Du Pont, to ensure against damage during handling and transit. This protection shall include:
1. Sturdy wood crates.
 2. Additional protection for corners and edges.
 3. Use of pallets to permit loading and unloading with a forklift truck.
 4. Provisions to minimize stresses on curved surfaces.
 5. Use of an exclusive truck with weather protection for shipment.
- B. Each crate shall be identified as follows:
- Du Pont Order AXC-6851-W
EN Number
Part Name
- C. The two thicknesses of bottom corner liners shall be packaged separately and identified by thickness.

VII. INSPECTION

A. General

1. Inspection of the material by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by calling (302) 366-3601.
2. See Paragraph VIII for documentation requirements.

B. Inspection Instructions

The following inspections will be performed by the Du Pont QAFR:

SPECIFICATION

PLANT: SAVANNAH RIVER
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1. Preliminary Inspection

The QAFR shall perform the following checks prior to fabrication:

- a. Inspect all forming and trim fixture components, Paragraph III.8, and check for shipping damage.
- b. Establish a technique with the vendor to check fit-up of the bottom corner segments, D-185715-B, with the bottom head liner, D-185715-A.

2. Intermediate Inspections

- a. Verify that chemical and physical properties of the material meet the requirements in Paragraph IV.2, using the test material per Paragraph IV.3.
- b. Witness and approve fit-up of bottom corner segments with the bottom head liner per Paragraph IV.D.
- c. Verify that all components meet the drawing dimensions and tolerances.

3. Final Inspection

- a. Final inspection will be a joint inspection including representatives of the Du Pont Engineering Department, Operating Department, and Toledo Engineering Co.
- b. Following approval and acceptance of the material, the QAFR shall review and approve preparations for shipping per Paragraph VI.

VIII. QUALITY ASSURANCE DOCUMENTATION

- A. Metals Systems shall furnish four (4) sets of certification data in accordance with the following schedule. Each set shall include an inventory transmittal sheet listing all documents and number of pages.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
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REV: 5
DATE: October 29, 1986
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B. Each set of certification data shall include the following:

1. Chemical analysis from the test material, Paragraph IV.C.3.
2. Physical property data from the test material, Paragraph IV.C.3:
 - a. Cold crushing strength
 - b. Bulk density
3. Outside diameter of the assembled bottom head and bottom corner liner for both the 1-1/8 inches and 1-1/4 inches nominal bottom corner liner thicknesses.

C. Each certification page shall include the following information:

Fiberfrax Formed Shapes
Project 9S1780
Du Pont Order AXC-6841-W
EN S350-185-12-40 (For Item 1 material)
EN S999-350-12-40 (For Item 2 material)

D. The Du Pont QAFR shall review the documentation packages and signify acceptance by signing and dating the inventory transmittal sheet.

E. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph VII.8.2.a to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
Attn: Mr. J. D. Gutmann

F. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)

SPECIFICATION

PLANT: SAVANNAH RIVER
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2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

Attn: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E. I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

Attn: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E. I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

Attn: QAE - S. B. Hicks

- G. The Du Pont QA FR shall verify transmittal of these documents and state verification in the night message.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

3 DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

(TWX: 810-771-3871)

TEL 803-726-6211

WIL AUGUSTA, GA

VC: 08631

(303) 279-6565
Coors Porcelain Company
600 West Ninth Street
Golden, CO 80401

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
12	16	86

ORDER NO.
AXC 1489W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-12.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.

DDC-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1)

5-1-1 ON CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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MODIFY ORDER IN PART, TO INCLUDE "SHIPPING INSTRUCTIONS" AND ADDITIONAL DU PONT DETAIL DRAWINGS COVERING (NEW) ITEMS PER THIS "LATEST" REVISED SPECIFICATION.

THIS IS AN UNPRICED ALTERATION. IT IS IMPERATIVE THAT YOU NOTIFY US OF ANY CHANGE IN PRICE BY 1/13/87. PRICES MUST REFLECT LIST, DISCOUNT AND NET FOR EACH ITEM. In addition, you must advise if any change in the date of submission of approval and/or final drawings (if required) and/or shipping date will occur as a result of this alteration. All terms and conditions established in our original order, except as modified herein, shall continue in full force and effect.

FAILURE TO PROVIDE THIS INFORMATION (EVEN IF NO CHANGE) IN A TIMELY MANNER WILL DELAY PAYMENT OF YOUR INVOICE AS THE ALTERATION CANNOT BE PRICED AND FORWARDED TO ACCOUNTS PAYABLE UNTIL THIS DATA IS RECEIVED IN THIS OFFICE.

1 S350-185-10-2 Isolator - External Canyon Melter

no change in price

SHEET

FINAL

PRIORITY RATING / AOM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

9S1780

mks

3-1489

ORDER NO.

See Specification

EXECUTED BY

A. P. Lawrence

ORIGINATOR

1-0-0-

BEST

AXC-1489-W A2

ISSUING POINT

XXXXXXXXXX

Wilm. DE

BUYER

1,695.00

AMOUNT

\$0.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALE AND USE TAXES PURSUANT TO EXEMPTIC CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE A TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SP00001

(TYPC STD-771-2871) TEL 803-726-8211 FAX ALBUQUERQUE, NM

DATE		
MO	DAY	YR
12	16	86

ORDER NO. **AXC 1489W**

VC: 08631

(303) 279-6565
Coors Porcelain Company
600 West Ninth Street
Golden, CO 80401

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAIN
SHOWN ON EACH ITEM PACKAGE. CORRESPONDENCE ON
INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY DATE
PROMISED SHIPPING DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD. IN
ORDERING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-1 (REVISED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1)
USE UNDER DPM REGULATION 1

DD-1 (REVISED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1)

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

1	S999-350-10-2	Isolator - External Melter (Spare) <i>Spare Parts</i>	\$11,248.00 \$19,298.00 \$13,789.00 *SEE SUMMARY OF CHANGES PAGE #BB
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Per Spec. 3-1489 Rev. 2 dated 12/10/86
attached and made part of this order.

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Previous Price \$47,060.00
Act 2 Increase 1,635.00
New Total Firm Price \$48,695.00

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY ORDER NO. See Specification DEST. AXC-1489-W A2		EXECUTED BY A. M. Lawrence ISSUING POINT XXXXXXXX WILM. DE	REQUISITION NUMBERS 951780 mks 3-1489 ORIGINATOR 1-0-0 BUYER AMOUNT \$.01
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ITEM NO.	GENERAL LEDGER & COST CODE
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DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXL
CERTIFICATE NO 2139 WHICH AUTHORIZES E.I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE A
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
05	10	86

ORDER NO.
AXC 1489W

TO
Coors Ceramics Co.
Structural Division
600 9th Street
Golden, CO 80401

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOB 41 OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER. DOW-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 11.	DATE
See*Body	1/30/87 & 3/6/87	☒	

CASH TERMS	VIA	F.O.B.
N30	Later	Golden, CO - Collect

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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1	S350-165-10-2	Isolator - External Canyon Melter	\$15,600.00
1	S999-350-10-2	Isolator - External Melter (Spare)	\$15,600.00

Spare Parts \$11,944.00

One lot QA Documentation per Section XII of Specification 3-1469 Rev.0 & N/C.

Required Shipping Date:
3/6/87 - See Page 4C.

Per Spec. 3-1489 dated 07/28/86 attached and made part of this order.

Total Price \$43,160.00

SHEET ☐ FINAL ☐	PRIORITY RATING/ACM EXECUTED BY	REQUISITION NUMBERS
WORK AND SHIP AS FOLLOWS: E. I. DU PONT DE NEMOURS & COMPANY	EXECUTED BY A. M. Lawrence	951760 mfc 3-1489
See Body	ISSUING POINT Wilm, DE	ORIGINATOR 1-0-0-1
AXC-1489-W		BUYER AMOUNT \$43,160.00

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC08-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX. 810-771-2671) TEL. 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
09	10	86

ORDER NO.

AXC 1489W

TO

Coors Ceramics Co.
Structural Division
600 9th Street
Golden, CO 80401FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. NO. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE 1/30/87

& 3/6/87

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOY A.
OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-E-11 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11)

E. I. du Pont de Nemours & Co. (Inc.)

See*Body

A ☒ XB ☐CASH TERMS
N30VA
LaterFOB
Golden, CO - Collect

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

1	S350-185-10-2	Isolator - External Canyon Melter	\$15,608.00
1	S999-350-10-2	Isolator - External Melter (Spare)	\$15,608.00

Spare Parts \$11,944.00

One lot QA Documentation per
Section XII of Specification
3-1489 Rev.0 & N/C.Required Shipping Date:
3/6/87 - See Page 4CPer Spec. 3-1489 dated 07/28/86
attached and made part of this order.

Total Price \$43,100.00

SHEET ☐ FINALMARK AND SHIP AS FOLLOWS:
TO E. I. DU PONT DE NEMOURS & COMPANYORDER
NO.

See Body

DIST

AXC-1489-W

PRIORITY RATING / ACM EXECUTED BY

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXXXXX Wilm, DE

REQUISITION NUMBERS

951780
3-1489

mfc

ORIGINATOR

1-0-0-1

BUYER

AMOUNT

\$43,100.00

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EX-1
CERTIFICATE NO 2139 WHICH AUTHORIZES
DU PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1489
REV: 2
DATE: December 10, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION

ALUMINA ISOLATORS - MELTER VESSEL EXTERNALS

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1489
REV: 2
DATE: December 10, 1986
PAGE: 8

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1489
REV: 2
DATE: December 10, 1986
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SUMMARY OF CHANGES PER REVISION #1

<u>Page</u>	<u>Paragraph</u>	<u>Description of Change</u>
C	II.	Added shipping address
2	III.A.	Drawing D-199264 changed to Rev. 3 Added Drawing D-188788, Rev. 8
3	IV.	Added Drawing D-188788-C
6	V.B.	Added V.B.5., Group #9

(N)

SUMMARY OF CHANGES PER REVISION #2

<u>Page</u>	<u>Paragraph</u>	<u>Description of Change</u>
2	III.A.	Added Drawing D-187871, Rev. 39
3	IV.	Added Detail D-187871-AA
6	V.B.5.	Added Detail D-187871-AA

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1489
REV: 2
DATE: December 10, 1986
PAGE: C

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before September 1, 1986.
2. Place order by September 15, 1986. Upon order placement, the vendor will be released to fabricate all items included in this order.

B. Shipping Dates

1. First priority is the lot of isolators and spares for the canyon melter vessel, EN S350-185-10-2. These must be shipped no later than January 30, 1987.
2. Second priority is the lot of isolators and spares for the spare melter vessel, EN S999-350-10-2. These must be shipped no later than March 6, 1987.

II. SHIPPING INSTRUCTIONS

1. Ship the riser heater isolators, crating group 9 to:

Keller Technology
2320 Military Road
Tonawanda, NY 14150

Mark:

ATTN: Frank Steinbruckner
For Use On Du Pont Order AXC-6853-W
Riser/Pour Spout Heater Assy

2. Shipping instructions for the remaining crating groups will be furnished at a later date.

III. QUOTATION BASIS

The vendor's quotation shall include the following cost summaries:

- A. Total cost for each item number.
- B. Total cost of entire order.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

J. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
TWX: 810-771-2671 TEL 803-725-6211 WU: AUGUSTA GA)

DATE		
MO	DAY	YR
4	23	86

ORDER NO.	
AXC	Alt 03 8417W

VC: 05202

TO

(415) 592-9440
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DD-E-1: CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

E-1: (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Alteration issued to include additional cost to cover
"freight" and reinspection of parts as described in
vendor's letter dated 3/18/86.

Increase per this alteration amounts to \$2,009.00.

Rework or replacement of any part will be supplied
once Du Pont decides the disposition of parts
concerned.

1 SetS350-185-18-2 Isolator - Electrical

1 SetS999-350-18-2 Isolator - Electrical

Previous Price	\$194,807.00
Alt. 03 Increase	\$2,009.00
New Total Price (NTE)	\$196,816.00

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

DEST

AXC-8417 Alt 03

EXECUTED BY

A. M. Lawrence

ISSUING POINT

AUGUSTA, GA

XXXXXXXX Wilm, DE

ORIGINATOR

3-8417

BUYER

AMOUNT

1-0-0-0
\$2,009.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

bah

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1489
REV: 2
DATE: December 10, 1986
PAGE: 1

I. IDENTIFICATION

<u>Item No.</u>	<u>Engineering Nos</u>	<u>Description</u>
1	S350-185-10-2	External Canyon Melter Isolators
2	S999-350-10-2	External Spare Melter Isolators

II. GENERAL

A. Scope

This specification covers requirements for material, quality, dimensions, tolerances, and inspection for alumina isolators. These will be installed on external surfaces of two glass melter vessels.

B. Melter Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

C. Melter Configuration

The melter vessel consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment. A section view is shown on Drawing W-732366.

D. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters. Since the glass conducts electricity, all externally mounted equipment that can contact the glass must be electrically isolated from the vessel shell.

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

8 of 9

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
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E. Critical Tolerances and Quality of Isolators

The isolators for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melter: Once started up, the melter must be operated and maintained by remote control for a period of years. Since there are no provisions to remove and replace isolators, failure of any one isolator could shut down the process and result in delays and equipment damage.

III. REFERENCE DOCUMENTS

A. Drawings for Fabrication

<u>Drawing No.</u>	<u>Rev.</u>
D-187871	34
D-187872	1
D-199264	3
D-188788	8
D-187871	39

(N)

B. Drawings for Information

<u>Drawing No.</u>	<u>Rev.</u>
W-732366	40

SPECIFICATION

PLANT: SAVANNAH RIVER
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IV. QUANTITIES

The vendor shall furnish the following:

DRAWING NO.		QUANTITIES			Total
		Item 1 Canyon Melter EN S350-185-10-2	Item 2 Spare Melter EN S999-350-10-2	Item 3 Spare Parts	
D-187871-C		4	4	2	10
50+50	-D	62 50	62 50	16	140
	-E	12	12	4	28
	-G	14	14	4	32
	-H	2	2	2	6
	-K	4	4	2	10
	-L	4	4	2	10
	-U	2	2	2	6
	-Y	36	36	8	80
	-Z	2	2	2	6
7	D-187872-A	4	4	2	10
	-B	2	2	2	6
	D-199264-A	2	2	2	6
	-B	1	1	2	4
	D-189788-C		2	1	3
(N)	D-187871-AA		2	1	3

SPECIFICATION

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V. CRATING GROUPS

The lot of isolators in paragraph IV shall be grouped and crated by group as follows. See paragraph X for packaging instructions.

A. External Canyon Melter Isolators - EN S350-185-10-2

1. Group 1 - Vessel Refractory Thermocouple Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-H	2	1	3
D-187871-L	4	1	5
D-187871-K	4	1	5
D-187871-U	2	1	3

2. Group 2 - Anchor Flange Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-D	50	6	56
D-187871-G	14	2	16
D-187871-Y	36	4	44
D-187872-A	4	1	5
D-187872-B	2	1	3

3. Group 3 - Top Head Thermowell Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-C	4	1	5
D-187871-D	12	2	14
D-187871-E	12	2	14
D-199264-A	2	1	3
D-199264-B	1	1	2

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4. Group 4 - Feed Tube Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-Z	2	1	3

B. External Spare Melter Isolators EN S999-350-10-2

1. Group 5 - Vessel Refractory Thermocouple Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-H	2	1	3
D-187871-L	4	1	5
D-187871-K	4	1	5
D-187871-U	2	1	3

2. Group 6 - Anchor Flange Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-D	50	6	56
D-187871-G	14	2	16
D-187871-Y	36	4	44
D-187872-A	4	1	5
D-187872-B	2	1	3

3. Group 7 - Top Head Thermowell Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-C	4	1	5
D-187871-D	12	2	14
D-187871-E	12	2	14
D-199264-A	2	1	3
D-199264-B	1	1	2

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PLANT: SAVANNAH RIVER
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4. Group 8 - Feed Tube Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-187871-Z	2	1	3

5. Group 9 - Riser Heater Isolators

Drawing No.	Quantity for Melter	Spares	Total
D-188788-C	2	1	3
D-187871-AA	2	1	3

(N)

VI. MATERIAL

- A. The material for electrical isolators included in this specification shall be alumina ceramic as shown on the drawings. Properties of the material shall be within the ranges given below. Where the ranges are not given, specified properties are minimum required.

B. Material Properties

Alumina Content	99.5%
Crystal Size, Range	79-985 microinches
Average	473 microinches
Specific Gravity	3.5 - 3.9
Hardness	74-85 R45N
Surface Finish, As Fired	35-63 microinches
Ground	20-50 microinches
Water Absorption	None
Gas Permeability	None
Compressive Strength @ 25°C	300-400 kpsi
1000°C	43 kpsi
Flexible Strength @ 25°C	43-55 kpsi
1000°C	17-25 kpsi
Maximum Use Temperature	1200°C
Coefficient of Linear Thermal Expansion, 25-1200°C	4.2-5.0 x 10 ⁻⁶ /°F
Thermal Conductivity	90-210 BTU-in/°F-ft ² hr
Thermal Shock Resistance	Good
Dielectric Strength, 1/4" Specimen	180 rms volts/mil

SPECIFICATION

PLANT: SAVANNAH RIVER
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Dielectric Constant @ 25°C	8.5
Volume Resistivity @ 700°C	5.0×10^7 ohm-cm ² /cm
1000°C	5.0×10^5 ohm-cm ² /cm
Te Value	950°C

VII. CRITICAL QUALITY REQUIREMENTS

A. Visual Requirements

Parts shall be uniform in color and texture. Visible blemishes, such as pits, chips, cracks and blisters, shall not be permitted to the extent that the life and usefulness of the parts are impaired. Chip size up to 1/32 inch are allowed. Maximum length of any chip shall not exceed 1/2 inch. If there are more than 3 chips on any part, Du Pont approval is required.

B. Deviation Reports and Vendor Responsibility for On-Time Shipment of Parts

Any deviation to the above specified requirements shall be submitted for consideration to the Du Pont Engineering Department, see paragraph XII.D for address. This information shall include sketches, and explanation of terms and abbreviations used to describe the defect.

Part rejection from unacceptable deviation or defect shall not be considered an acceptable reason for delay in the shipment of the part. Vendor shall schedule manufacture of parts, allowing adequate time for on time delivery of all parts including those found unacceptable due to deviations or defects.

C. Vendor Inspection Level

Parts shall be inspected visually and dimensionally 100% by the vendor. All deviations shall be processed as outlined in Paragraph VII.B. Final inspection of parts by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment, see Paragraph XI.

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VIII. SPARE BLANKS

The vendor must safely and properly retain in storage, for a period of up to 6 months after completion of order, spare blanks to assure 4-6 weeks delivery of replacement finished parts in the event that parts are damaged in shipping or handling or are unusable in the assembly of the equipment.

It is required that the number of blanks held in storage be adequate to supply at least one finished part of each kind included in Paragraph IV.

The spare blanks retained in storage, as above, could be the extra blanks that the vendor will normally make in providing the specified quantity of finished parts given in Paragraph IV.

The spare blanks shall be the property of the buyer. The vendor shall ship, use or otherwise dispose of the spare blanks on buyer's specific instructions.

IX. STATUS REPORT

Vendor shall submit a bi-weekly report on the status of parts on order and the forecast delivery schedule. The report shall be submitted to the address given in Paragraph XII.D. Vendor shall notify Du Pont, as soon as possible, any impact on the required or previously forecast delivery schedule of the parts.

X. PART IDENTIFICATION, PACKAGING AND SHIPMENT

The following instructions must be followed for identification, packaging and shipment of isolators. These requirements will ensure proper identification of fragile isolators, with minimum handling, during the assembly of the equipment.

A. Part Identification and Packaging

1. Isolators shall be packaged individually and crated in groups, as listed in Paragraph V, ie, there will be eight separate crates.
2. Each group crate shall include the following identification.
 - a. Du Pont Order AXC-1489W
 - b. EN Number

SPECIFICATION

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- c. Group Number
- d. Group Identification

3. Packaging shall be such as to ensure against damage during handling and shipment.

B. Shipment

Isolators shall be shipped in an enclosed vehicle, unless otherwise advised by Du Pont prior to shipment of parts.

XI. INSPECTION

A. General

1. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by telephoning (302) 366-3601.

B. Inspection Schedule

Final inspection, prior to shipment.

C. Inspection Instructions (The following inspections will be performed by the QAFR)

Final inspection, prior to shipment.

1. Review and approve certifications for material, including: chemical analysis, compressive strength per ASTM C773 and dielectric strength per ASTM D116.
2. Visually inspect each item for detrimental defects and sharp edges.
3. Witness the dimensional inspection of one item from each detail 100%. Randomly inspect dimensions of the remaining items. If dimensions are found to be out of tolerance, the sample quantity shall be increased until adequate confidence in the dimensions of the finishes items is developed.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
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4. Review the vendor's proposed method of packaging for shipment. See Paragraph X for crating requirements by group.

XII. QUALITY ASSURANCE DOCUMENTATION

- A. The manufacturer shall prepare a documentation inventory transmittal sheet (listing all documents, and number of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list the Du Pont order number, project number, equipment EN number, and be consecutively numbered.
- C. The Du Pont QAFR shall review documentation packages and sign and date each inventory transmittal sheet signifying acceptance prior to release for shipment.
- D. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph XI.C., to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
ATTN: Mr. J.D. Gutmann, Jr.
- E. The remaining sets shall be sent at time of shipment as follows:
 1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

ATTN: Construction-Material Expediter
Construction Administration Building

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-1489
REV: 2
DATE: December 10, 1986
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By Parcel Post:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

ATTN: QAE-S.B. Hicks

- F. The Du Pont QA FR shall verify transmittal of these documents and state verification in the night message.
- G. Three copies of the following QA records are required (one copy per transmittal package).
1. Chemical analysis
 2. Dielectric strength certificates
 3. Compressive strength certificates
 4. Deviation reports generated during execution of Paragraph VII.C.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2571) TEL 803-725-8211 WJ: AUGUSTA, GA)

DATE		
MO	DAY	YR
4	7	86

ORDER NO.	
AXC	Alt 4 6852W

VC: 05202

(415) 592-9440
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY DATE	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER. DO-5-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1)	6-1-1 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1
CASH TERMS	VIA	F.O.B.	

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
ISOLATORS - ELECTRODE & HEATERS - DOME/ WITH SPARES			
Modify order in part, as per the "latest" revised specification 3-6852, Rev. 3 dated 2/18/86 (see summary of changes page "BB") Rev. 3.			
1	S350-185-14-1	Isolators - Electrode	
1	S350-185-16-1	Isolators - Dome Heaters	
1	S999-350-14-1	Isolators - Electrode - Spares	
1	S999-350-16-1	Isolators - Dome - Heaters - Spares	
No change in price which remains at			\$55,609.90

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		PRIORITY RATING / ACM EXECUTED BY <i>J. E. Templeton</i>	REQUISITION NUMBERS 3-6852
ORDER NO.	ISSUING POINT AUGUSTA, GA.	EXECUTED BY J. E. Templeton	ORIGINATOR 1-0-0-
DEST	GENERAL LEDGER & COST CODE 9S1780 bah	BUYER ***** Wilm, DE	AMOUNT \$55,609.90
<p>9S1780</p> <p>bah</p> <p>IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.</p>			<p>DIRECT ALL INQUIRIES TO THE ABOVE BUYER.</p> <p>PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 2139 WHICH AUTHORIZES E.I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.</p> <p>APPROVED FOR DU PONT</p>

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001SALAMANCA RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30813
(TWX: 810-771-2671) TEL 803-726-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
4	7	86

ORDER NO.	
AXC	Alt 6852W

VC: 05202

TO

(415) 592-9440
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.

DD-8-11 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1)

S-111 IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

VIA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

This confirms LtrAlt order placed 3/3/86
with M. Bell by J. E. Templeton

Per quotation letter dated 3/24/86
by M. Bell

TECHNICAL CONTACT: J. D. Gutmann 302-366-3929

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

EXECUTED BY

ORIGINATOR

ORDER
NO.
DEST

J. E. Templeton

ISSUING POINT
AUGUSTA, GA.

BUYER

AMOUNT

AXC-6852-W-44

XXXXXXXXXX Wilm, DE

ITEM NO.

GENERAL LEDGER & COST CODE

951780

bah

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXE CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6852
REV: 3
DATE: February 18, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR ISOLATORS FOR ELECTRODES AND DOME HEATERS

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SUMMARY OF CHANGES PER REVISION #1

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
C	II	Shipping instructions added.

SUMMARY OF CHANGES PER REVISION #2

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
C	I.B.	Shipping date priorities expanded and elaborated.
1	I	<u>IDENTIFICATION</u> - specifics added to clarify identification.
2	II.F.	Rewritten for clarification.
	III.A.	Rewritten and quantities changed as shown.
3	III.B.	Rewritten and quantities changed as shown.

(N)

SUMMARY OF CHANGES PER REVISION #3

<u>Page</u>	<u>Paragraph</u>	<u>Revision</u>
4	V.	Deleted requirements for tolerances on linear dimensions and angular dimensions.
4	V.	Revised edge and fillet radius to read .030" maximum.

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ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before October 14, 1985
2. Place order by November 1, 1985. The vendor will be released to proceed with the manufacture of all items included in the order.

B. Shipping Dates

(C)

1. First Priority

The first priority are those isolators required for the canyon melter, including spares, which must be shipped no later than 4/14/86.

<u>Item No.</u>	<u>EN Number</u>	<u>Description</u>	<u>Paragraph</u>
1	S350-185-14-1	Electrode Isolators - Canyon Melter	III.B
2	S350-185-16-1	Dome Heater Isolators - Spare Melter	III.C

2. Second Priority

The isolators required for the spare melter are second priority and may be shipped at a later date. These are:

<u>Item No.</u>	<u>EN Number</u>	<u>Description</u>	<u>Paragraph</u>
3	S999-350-14-1	Electrode Isolators - Spare Melter	III.D
4	S999-350-16-1	Dome Heater Isolators - Spare Melter	III.E

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ADDITIONAL QUOTATION REQUIREMENTS (Cont'd)

II. SHIPPING INSTRUCTIONS

Keller Technology
2320 Military Road
Tonawanda, NY 14151

Container should be marked:

ATTN: Frank Steinbruckner
For use on Du Pont Order AXC-6853W

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I. IDENTIFICATION

	<u>Item No</u>	<u>Engg Nos (EN)</u>	<u>Description</u>
(C)	1	S350-185-14-1	Set of Electrical Isolators (Alumina) for Canyon Melter Electrodes
(C)	2	S350-185-16-1	Set of Electrical Isolators (Alumina) for Canyon Melter Dome Heaters
(C)	3	S999-350-14-1	Set of Electrical Isolators (Alumina) for Spare Melter Electrode Spares
(C)	4	S999-350-16-1	Set of Electrical Isolators (Alumina) for Spare Melter Dome Heater Spares

II. GENERAL

A. Scope

This specification covers requirements for material, quality, dimensions, tolerances, and inspection for alumina isolators for riser/pour spout heater for the glass melters.

B. Melter Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

C. Melter Configuration

The melter vessel consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment. The vessel is equipped with internal insulation, refractory lining, and auxiliary equipment.

D. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

N = New

C = Change

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E. Critical Tolerances and Quality of Isolators

The isolators for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters.

(C) F. Long Term Reliability of Isolators

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions to remove and replace electrodes and dome heaters. Failure of an isolator could shutdown the process, and require replacement of the entire melter.

III. CONFIGURATION AND QUANTITIES

- (C) A. EN S350-185-14-1 Canyon Melter Electrode Isolators
EN S999-350-14-1 Spare Melter Electrode Isolators

Vendor shall furnish alumina isolators per the following:

<u>Drawing No</u>	<u>Rev</u>	No Req'd <u>Canyon Melter</u>	No Req'd <u>Spare Melter</u>	<u>Spares</u>	<u>Tot Qty Req'd</u>
D-187871-A	13✓	16	16	3	35
D-187871-B	13✓	16	16	3	35
D-188463-A	0✓	4	4	2	10
D-188463-B	0✓	4	4	2	10
D-188463-C	0✓	4	4	2	10

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- (C) B. EN S350-185-16-1 Canyon Melter Dome Heaters Isolators
 EN S999-350-16-1 Spare Melter Dome Heaters Isolators

Vendor shall furnish two (2) complete sets of alumina isolators per the following drawings.

<u>Drawing No</u>	<u>Rev</u>	<u>No Req'd Canyon Melter</u>	<u>No Req'd Spare Melter</u>	<u>Spares</u>	<u>Tot Qty Req'd</u>
D-198210-A	0 ✓	8	8	2	18
D-198210-B	0	8	8	2	18
D-198210-C	0	4	4	2	10
D-198210-D	0	4	4	2	10
D-198210-E	0	4	4	2	10
D-198210-F	0	4	4	2	10
D-187871-D	13 ✓	32	32	6	70
D-187871-Y	13	32	32	6	70

IV. MATERIAL OF CONSTRUCTION

A. Material

The material of construction for electrical isolators included in this specification shall be alumina ceramics as shown on the drawings. The properties of the material shall be within the ranges given below. Where the ranges are not given, specified properties are minimum required.

B. Material Properties

Alumina Content	99.5%
Crystal Size, Range	79-985 microinches
Average	473 microinches
Specific Gravity	3.5-3.9
Hardness	74-85 R45N
Surface Finish, As Fired	63 microinches
Ground	20-50 microinches
Water Absorption	None
Gas Permeability	None
Compressive Strength @ 25°C	300-400 kpsi
1000°C	43 kpsi
Flexural Strength @ 25°C	43-55 kpsi
1000°C	17-25 kpsi
Maximum Use Temperature	1200°C
Coefficient of Linear Thermal Expansion, 25-1200°C	4.2-5.0x10 ⁻⁶ /°F
Thermal Conductivity	90-210 BTU-in/°F-ft ² hr

N = New

C = Change

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B. Material Properties (Cont'd)

Thermal Shock Resistance	Good
Dielectric Strength, 1/4" Specimen	180-260 rms volts/mil
Dielectric Constant @ 25°C	8.5-9.5
Volume Resistivity @ 700°C	5.0×10^7 ohm-cm ² /cm
1000°C	5.0×10^5 ohm-cm ² /cm
Te Value	950°C

V. CRITICAL QUALITY REQUIREMENTS

A. Dimensional Tolerances

Unless otherwise specified on the drawing, parts shall meet the following minimum dimensional tolerances:

(D)	Parallelism:	Considered satisfactory if thickness measured at any point is within the dimensional tolerance
(D)	Flatness:	0.006 inch/inch
	Concentricity:	1%, 0.006 inch minimum
	Camber:	0.006 inch/inch
(C)	Edge and Fillet Radii:	0.030 inches maximum

B. Visual Requirements

Parts shall be uniform in color and texture. Visible blemishes, such as pits, chips, cracks and blisters, shall not be permitted to the extent that the life and usefulness of the parts are impaired. Chip size up to 1/32 inch are allowed. Maximum length of any chip shall not exceed 1/2 inch. If there are more than 3 chips on any part, Du Pont approval is required.

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C. Deviation Reports and Vendor Responsibility for On-Time Shipment of Parts

Any deviation to the above specified requirements shall be submitted with complete details, including sketches and explanation of terms and abbreviations used, to Du Pont Engineering Department to the address given in Paragraph XI.D. for determination if this will impair the fit-up, end use or performance of the equipment.

Part rejection from unacceptable deviation or defect shall not be considered an acceptable reason for delay in the shipment of the part. Vendor shall schedule manufacture of parts, allowing adequate time for on time delivery of all parts including those found unacceptable due to deviations or defects.

D. Vendor Inspection Level

Parts shall be inspected visually and dimensionally 100% by the vendor. All deviations shall be processed as outlined in Para. VI.C. Final inspection of parts by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment. See Para. X.

VI. SPARE BLANKS

The vendor must safely and properly retain in storage, for a period of up to 6 months after completion of order, spare blanks to assure 4-6 weeks delivery of replacement finished parts in the event that parts are damaged in shipping or handling or are unusable in the assembly of the equipment.

It is required that the number of blanks held in storage be adequate to supply at least one finished part of each kind included in Para. IV.A.

The spare blanks retained in storage, as above, could be the extra blanks that the vendor will normally make in providing the specified quantity of finished parts given in Para. IV.A.

The spare blanks shall be the property of the buyer. The vendor shall ship, use or otherwise dispose of the spare blanks on buyer's specific instructions.

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VII. STATUS REPORT

Vendor shall submit a bi-weekly report on the status of parts on order and the forecast delivery schedule. The report shall be submitted to the address given in Para. XI.D. Vendor shall notify Du Pont, as soon as possible, any impact on the required or previously forecast delivery schedule of the parts.

VIII. PART IDENTIFICATION, PACKAGING AND SHIPMENT

The following instructions must be followed for identification, packaging and shipment of isolators. The requirements will ensure easy identification of fragile isolators, with minimum handling, during the assembly of the equipment.

A. Part Identification and Packaging

1. Isolators shall be packaged individually or in groups. Outside of each package shall clearly show Du Pont part numbers and quantity of each part inside the package.
2. Isolators belonging to different engineering numbers shall not be mixed and packaged together in the same package or crate. See Paragraph IV.B for identification of parts in each engineering number.
3. Isolators with the same engineering numbers shall be packaged in sturdy wooden crates with weather protection.
4. Packaging shall be such as to ensure against damage during handling and shipment.

B. Shipment

1. Prior to shipping, outside of each crate shall be identified with the engineering number, Du Pont part numbers and quantity of each kind of part inside the crate.
2. Isolators shall be shipped in an enclosed vehicle, unless otherwise advised by Du Pont prior to shipment of parts.

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IX. INSPECTION

A. General

1. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by telephoning (302) 366-3601.

B. Inspection Schedule

Final inspection, prior to shipment.

C. Inspection Instructions (The following inspections will be performed by the QAFR)

Final inspection, prior to shipment.

1. Review and approve certifications for material, including: chemical analysis, compressive strength per ASTM C773 and dielectric strength per ASTM D116.
2. Visually inspect each item for detrimental defects and sharp edges.
3. Witness the dimensional inspection of one item from each detail 100%. Randomly inspect dimensions of the remaining items. If dimensions are found to be out of tolerance, the sample quantity shall be increased until adequate confidence in the dimensions of the finishes items is developed.
4. Review the vendor's proposed method of packaging for shipment.

X. QUALITY ASSURANCE DOCUMENTATION

- A. The manufacturer shall prepare a documentation inventory transmittal sheet (listing all documents, and number of pages) and attach to each set of documentation.

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- B. Each sheet of documentation shall list Du Pont P.O. number, project number, equipment EN number, and be consecutively numbered.
- C. The Du Pont QAFR shall review documentation packages and sign and date each inventory transmittal sheet signifying acceptance prior to release for shipment.
- D. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph XI.C., to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
ATTN: Mr. J.D. Gutmann, Jr.

- E. The remaining sets shall be sent at time of shipment as follows:
 - 1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 - 2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

ATTN: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

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PLANT: SAVANNAH RIVER
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SPEC: 3-8417
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DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR ISOLATORS FOR RISER/POUR SPOUT HEATER

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ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before May 24, 1985
2. Place order by July 12, 1985. The vendor will be released to proceed with the manufacture of all items included in the order.

B. Shipping Dates

Time is of the essence, and vendor's quotations are to be based on shipping all parts in each group no later than the dates given below:

<u>Parts in Enngg Group</u>	<u>Reference Paragraph</u>	<u>Shipping Date No Later Than</u>
S350-185-18-2	IV.B.1	December 13, 1985
S999-350-18-2	IV.B.2	February 14, 1986

If the vendor prefers, the same parts included in the above two groups can be finished at the same time. However, the shipping dates given above must be met for all parts in each group. Also, see Para. VI.C. regarding vendor responsibility for on-time delivery of parts in case of part rejection due to unacceptable deviations/defects.

II. SHIPPING INSTRUCTIONS

Shipping instructions will be furnished at a later date.

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I. IDENTIFICATION

<u>Item No</u>	<u>Engg Nos (EN)</u>	<u>Description</u>
1	S350-185-18-2	Set of Electrical Isolators (Alumina) for Riser/Pour Spout Heater Assembly
2	S999-350-18-2	Set of Electrical Isolators (Alumina) for Riser/Pour Spout Heater Assembly - Spare

II. GENERAL

A. Scope

This specification covers requirements for material, quality, dimensions, tolerances, and inspection for alumina isolators for riser/pour spout heater for the glass melters.

B. Melter Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

C. Melter Configuration

The melter vessel consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment. The vessel is equipped with internal insulation, refractory lining, and auxiliary equipment.

D. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

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II. GENERAL (Cont'd)

E. Critical Tolerances and Quality of Isolators

The isolators for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters.

F. Long Term Reliability of Isolators

Once started up, the melter must be operated and maintained by remote control for a period of years. There are no provisions to remove and replace riser/pour spout heater and other assemblies containing alumina isolators. Failure of an isolator could shutdown the process, and require replacement of the entire melter.

III. REFERENCE DOCUMENTS

The following drawings are to be considered a part of this specification and used as a basis for quotation and fabrication:

	<u>Drawing No</u>	<u>Rev</u>
(C)	D-187871	12
	D-188379	3
	D-188788	6
	D-188789	6
	D-188790	7

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IV. QUANTITY REQUIRED AND CRATING GROUPS

A. Required Quantity

The vendor shall furnish total quantity of isolators given below:

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Part</u>	<u>Description</u>	<u>Quantity For</u>		<u>Total Quantity</u>
				<u>2 Melters</u>	<u>Spares</u>	<u>For</u> <u>2 Melters + Spares</u>
(C) D-187871	12	-D	Isolator	20	2	22
		-E	Isolator	6	1	7
		-F	Isolator	4	1	5
		-G	Isolator	20	2	22
		-H	Isolator	8	1	9
		-J	Isolator	4	1	5
		-K	Isolator	16	2	18
		-L	Isolator	16	2	18
		-M	Isolator	4	1	5
		-A	Isolator	2	1	3
		-B	Isolator	2	1	3
D-188379	3	-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-A	Isolator	2	1	3
		-B	Isolator	14	2	16
D-188788	6	-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	8	1	9
		-F	Isolator	150	15	165
		-G	Isolator	36	4	40
		-H	Isolator	4	1	5
		-A	Isolator	2	1	3
		-B	Isolator	8	1	9
D-188789	6	-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	6	1	7
		-F	Isolator	2	1	3
		-G	Isolator	4	1	5

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IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Part</u>	<u>Description</u>	<u>Quantity For</u>		<u>Total Quantity</u>
				<u>2 Melters</u>	<u>Spares</u>	<u>For</u> <u>2 Melters + Soares</u>
D-188790	7	-A	Isolator	2	1	3
		-B	Isolator	12	1	13
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	2	1	3
		-F	Isolator	2	1	3

B. Isolator Groups for Crating

The above lot of isolators shall be grouped and crated by EN numbers listed below. See Paragraph IX for packaging details.

1. S350-185-18-2 Set of Electrical Isolators
 (Alumina) for Riser/pour Spot Heater
 Assembly

This group consists of the following:

<u>Dwg. No.</u>	<u>Part</u>	<u>Total</u> <u>Quantity</u>
D-187871	-D	12
	-E	4
	-F	3
	-G	12
	-H	5
	-J	3
	-K	10
	-L	10
	-M	3
	-N	3
D-188379	-A	2
	-B	2
	-C	2
	-D	2

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IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-188788	-A	2
	-B	9
	-C	2
	-D	2
	-E	5
	-F	90
	-G	22
	-H	3
D-188789	-A	2
	-B	5
	-C	2
	-D	2
	-E	4
	-F	2
	-G	3
	-H	2
D-188790	-A	2
	-B	7
	-C	2
	-D	2
	-E	2
	-F	2
	-G	2
	-H	2

2. S999-350-18-2 Set of Electrical Isolators
 (Alumina) for Riser/Pour Spout
 Heater Assembly - Spare

This group consists of the following:

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-187871	-D	10
	-E	3
	-F	2
	-G	10
	-H	4
	-J	2
	-K	8
	-L	8
	-M	2
	-N	2

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IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-188379	-A	1
	-B	1
	-C	1
	-D	1
D-188788	-A	1
	-B	7
	-C	1
	-D	1
	-E	4
	-F	75
	-G	18
	-H	2
D-188789	-A	1
	-B	4
	-C	1
	-D	1
	-E	3
	-F	1
	-G	2
D-188790	-A	1
	-B	6
	-C	1
	-D	1
	-E	1
	-F	1

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V. MATERIAL OF CONSTRUCTION

A. Material

The material of construction for electrical isolators included in this specification shall be alumina ceramics as shown on the drawings. The properties of the material shall be within the ranges given below. Where the ranges are not given, specified properties are minimum required.

B. Material Properties

Alumina Content	99.5%
Crystal Size, Range	79-985 microinches
Average	473 microinches
Specific Gravity	3.5-3.9
Hardness	74-85 R45N
Surface Finish, As Fired	63 microinches
Ground	20-50 microinches
Water Absorption	None
Gas Permeability	None
Compressive Strength @ 25°C	300-400 kpsi
1000°C	43 kpsi
Flexural Strength @ 25°C	43-55 kpsi
1000°C	17-25 kpsi
Maximum Use Temperature	1200°C
Coefficient of Linear Thermal Expansion, 25-1200°C	$4.2-5.0 \times 10^{-6}/^{\circ}\text{F}$
Thermal Conductivity	90-210 BTU-in/ $^{\circ}\text{F-ft}^2\text{hr}$
Thermal Shock Resistance	Good
Dielectric Strength, 1/4" Specimen	180-260 rms volts/mil
Dielectric Constant @ 25°C	8.5-9.5
Volume Resistivity @ 700°C	5.0×10^7 ohm-cm ² /cm
1000°C	5.0×10^5 ohm-cm ² /cm
Te Value	950°C

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8417
REV: 2
DATE: August 14, 1985
PAGE: 8

VI. CRITICAL QUALITY REQUIREMENTS

A. Dimensional Tolerances

Unless otherwise specified on the drawing, parts shall meet the following minimum dimensional tolerances:

Linear Dimensions:	$\pm 1\%$, but not less than $\pm 0.005"$
Angular Dimensions:	$\pm 2^\circ$
Parallelism:	Considered satisfactory if thickness measured at any point is within the dimensional tolerance
Flatness:	0.006 inch/inch
Concentricity:	1%, 0.006 inch minimum
Camber:	0.006 inch/inch
Edge and Fillet Radii:	0.005-0.030 inch

B. Visual Requirements

Parts shall be uniform in color and texture. Visible blemishes, such as pits, chips, cracks and blisters, shall not be permitted to the extent that the life and usefulness of the parts are impaired. Chip size up to 1/32 inch are allowed. Maximum length of any chip shall not exceed 1/2 inch. If there are more than 3 chips on any part, Du Pont approval is required.

C. Deviation Reports and Vendor Responsibility for On-Time Shipment of Parts

Any deviation to the above specified requirements shall be submitted with complete details, including sketches and explanation of terms and abbreviations used, to Du Pont Engineering Department to the address given in Paragraph XI.D. for determination if this will impair the fit-up, end use or performance of the equipment.

Part rejection from unacceptable deviation or defect shall not be considered an acceptable reason for delay in the shipment of the part. Vendor shall schedule manufacture of parts, allowing adequate time for on time delivery of all parts including those found unacceptable due to deviations or defects.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8417
REV: 2
DATE: August 14, 1985
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VI. CRITICAL QUALITY REQUIREMENTS (Cont'd)

D. Vendor Inspection Level

Parts shall be inspected visually and dimensionally 100% by the vendor. All deviations shall be processed as outlined in Para. VI.C. Final inspection of parts by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment. See Para. X.

VII. SPARE BLANKS

The vendor must safely and properly retain in storage, for a period of up to 6 months after completion of order, spare blanks to assure 4-6 weeks delivery of replacement finished parts in the event that parts are damaged in shipping or handling or are unusable in the assembly of the equipment.

It is required that the number of blanks held in storage be adequate to supply at least one finished part of each kind included in Para. IV.A.

The spare blanks retained in storage, as above, could be the extra blanks that the vendor will normally make in providing the specified quantity of finished parts given in Para. IV.A.

The spare blanks shall be the property of the buyer. The vendor shall ship, use or otherwise dispose of the spare blanks on buyer's specific instructions.

VIII. STATUS REPORT

Vendor shall submit a bi-weekly report on the status of parts on order and the forecast delivery schedule. The report shall be submitted to the address given in Para. XI.D. Vendor shall notify Du Pont, as soon as possible, any impact on the required or previously forecast delivery schedule of the parts.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 951780
SPEC: 3-8417
REV: 2
DATE: August 14, 1985
PAGE: 10

IX. PART IDENTIFICATION, PACKAGING AND SHIPMENT

The following instructions must be followed for identification, packaging and shipment of isolators. The requirements will ensure easy identification of fragile isolators, with minimum handling, during the assembly of the equipment.

A. Part Identification and Packaging

1. Isolators shall be packaged individually or in groups. Outside of each package shall clearly show Du Pont part numbers and quantity of each part inside the package.
2. Isolators belonging to different engineering numbers shall not be mixed and packaged together in the same package or crate. See Paragraph IV.B for identification of parts in each engineering number.
3. Isolators with the same engineering numbers shall be packaged in sturdy wooden crates with weather protection.
4. Packaging shall be such as to ensure against damage during handling and shipment.

B. Shipment

1. Prior to shipping, outside of each crate shall be identified with the engineering number, Du Pont part numbers and quantity of each kind of part inside the crate.
2. Isolators shall be shipped in an enclosed vehicle, unless otherwise advised by Du Pont prior to shipment of parts.

X. INSPECTION

A. General

1. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by telephoning (302) 366-3601.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8417
REV: 2
DATE: August 14, 1985
PAGE: 11

X. INSPECTION (Cont'd)

B. Inspection Schedule

Final inspection, prior to shipment.

C. Inspection Instructions (The following inspections will be performed by the QA/R)

Final inspection, prior to shipment.

1. Review and approve certifications for material, including: chemical analysis, compressive strength per ASTM C773 and dielectric strength per ASTM D116.
2. Visually inspect each item for detrimental defects and sharp edges.
3. Witness the dimensional inspection of one item from each detail 100%. Randomly inspect dimensions of the remaining items. If dimensions are found to be out of tolerance, the sample quantity shall be increased until adequate confidence in the dimensions of the finishes items is developed.
4. Review the vendor's proposed method of packaging for shipment.

XI. QUALITY ASSURANCE DOCUMENTATION

- A. The manufacturer shall prepare a documentation inventory transmittal sheet (listing all documents, and number of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list Du Pont P.O. number, project number, equipment EN number, and be consecutively numbered.
- C. The Du Pont QA/R shall review documentation packages and sign and date each inventory transmittal sheet signifying acceptance prior to release for shipment.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8417
REV: 2
DATE: August 14, 1985
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XI. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

- D. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph XI.C., to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
ATTN: Mr. J.D. Gutmann, Jr.

- E. The remaining sets shall be sent at time of shipment as follows:

1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

ATTN: Construction-Material Expediter
Construction Administration Building

By Parcel Post:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8417
REV: 2
DATE: August 14, 1985
PAGE: 13

XI. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

By Air Mail:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

ATTN: QAE-S.B. Hicks

- F. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.
- G. Three copies of the following QA records are required (one copy per transmittal package).
1. Chemical analysis
 2. Dielectric strength certificates
 3. Compressive strength certificates
 4. Deviation reports generated during execution of Paragraph VI.C.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
01	13	87

ORDER NO.
AXC 8823W A6TO VC: 05202
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002FURNISH
PACKING
LIST
FOR EACH SHIPMENTORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY PROMISED SHIPPING DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.

DD-4-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1)

E-1-1 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

CASH TERMS

VA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

This alteration issued to correct pricing as shown:

1 EN G 510-101-55-5 +\$2,000.00

Previous Total Price \$281,131.59

Alt. 6 Increase 2,000.00

New Total Price \$283,131.59

— 6 740.00 *Just stand value*

2 | 276,391.59

138,195 per value

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

BCC: Charge to SRP
Account
8452-AD-03Y

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBER
951780
3-8823EXECUTED BY *Lawrence*

ORIGINATOR

ISSUED FOR *Wilm.*
AUGUSTA, GA.BUYER *DE* +\$2,000.00 AMOUNT

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE A
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXEM
CERTIFICATE NO. 2139 WHICH AUTHORIZES
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.) *P/07*

SAMANNAH RIVER PLANT

P.O. BOX 117 (13) Augusta, GA. 30913

(TWX: 810-771-2671)

TEL 803-725-6211

WU: AUGUSTA, GA

DEPARTMENT OF ENERGY
CONTRACT DE-AC05-78OR00001

VC: 05202

TO

(415) 592-9440
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002FURNISH
PACKING
LIST
FOR EACH SHIPMENT

DATE		
MO	DAY	YR
1	13	86

ORDER NO.	Alt 2
AXC 8823W	

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.
REQUIRED DELIVERY DATE PROMISE SHIPPING DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FULFILL THIS ORDER.
DD-4-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 1)

E-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

8 ☐

F.O.B.

CASH TERMS

VIA

PRICE

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Modify order in part, as per Du Pont's "latest"
revised drawings, and specification 3-8823, Rev. 2,
dated 12/3/85 attached and made part of this order.

1 SetS350-185-19-2

Isolator - Electrical
(Alumina) for Drain Valve Assembly

1 SetS999-350-19-2

Isolator - Electrical
(Alumina) for Drain Valve Assembly
Spare

1 SetG510-101-55-5

Isolator - Electrical
(Alumina) for Test Drain ValvePrevious Price
Alt. 2 Increase
New Total Price

\$274,278.79

\$6,740.00

\$281,018.79

This confirms LtrAlt order placed 12/6/85
with H. Bell by J. E. TempletonPer Quotation letter dated 12/20/85
by H. Bell

JAN 2

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-8823-W A2

ITEM NO.

GENERAL LEDGER & COST CODE

951780

kj

PRIORITY RATING/ACM EXECUTED BY

EXECUTED BY

J. E. Templeton

ISSUING POINT

XXXXXX wilm, DE

REQUISITION NUMBERS

3-8823

ORIGINATOR

1-0-0

BUYER

AMOUNT

\$6,740.0

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 2

II. GENERAL (Cont'd)

E. Critical Tolerances and Quality of Isolators

The isolators for this application must be manufactured to meet stringent requirements for material quality, surface appearance, finished dimensions, and tolerances. This is dictated by unique operating conditions of DWPF melters.

F. Long Term Reliability of Isolators

Once started up, the valve must be operated by remote control for a period of years. There are no provisions to maintain or replace the valve during the operating period of the melter. Failure of an isolator could shutdown the process.

III. REFERENCE DOCUMENTS

The following drawings are to be considered a part of this specification and used as a basis for quotation and fabrication:

<u>Drawing No.</u>	<u>Rev.</u>
D-187871	14
D-189108	7
D-189150	6
D-189451	6
D-189455	1
D-189456	1
D-189463	5
D-189464	2
D-189465	5
D-189466	5
D-189467	5
D-189496	4
D-189497	3
D-189676	3
D-189677	2
D-199663	0

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 1

I. IDENTIFICATION

<u>Item No.</u>	<u>Engg. Nos (EN)</u>	<u>Description</u>
1	S350-185-19-2	Set of Electrical Isolators (Alumina) for Drain Valve Assembly
2	S999-350-19-2	Set of Electrical Isolators (Alumina) for Drain Valve Assembly - Spare
3	G510-101-55-5	Set of Electrical Isolators (Alumina) for Test Drain Valve. See page D.

II. GENERAL

A. Scope

This specification covers requirements for material, quality, dimensions, tolerances, and inspection for electrical isolators for drain valve assemblies for the glass melters.

B. Melter Application

The glass melter will be installed and operated in the future Defense Waste Processing Facility (DWPF) at the Savannah River Plant, near Augusta, GA. This facility will prepare radioactive waste material, for long-term storage, by converting it into a stable borosilicate glass form.

C. Melter Configuration

The melter vessel consists of a water jacketed shell and top head, with nozzles for supporting auxiliary equipment. The vessel is equipped with internal insulation, refractory lining, and auxiliary equipment.

D. Melter Operation

A slurry of radioactive waste, glass frit, and water is metered through two feed tubes to the glass pool. Energy for the glass melt is provided by passing electric current between immersed plate electrodes. Additional heat energy is furnished by the eight resistance heaters above the melt pool. Molten glass is poured via differential pressure from the pour spout into stainless steel canisters.

C = Changed
2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 3

IV. QUANTITY REQUIRED AND CRATING GROUPS

A. Required Quantity

The vendor shall furnish total quantity of isolators given below:

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Part</u>	<u>Description</u>	<u>Quantity For</u>		<u>Total Quantity</u>
				<u>2 Valves</u>	<u>Spares</u>	<u>For</u> <u>2 Valves + Spares</u>
D-187871	14✓	-D	Isolator	8	1	9
		-K	Isolator	4	1	5
		-L	Isolator	56	6	62
		-N	Isolator	8	1	9
		-P	Isolator	8	1	9
		-R	Isolator	20	2	22
		-S	Isolator	4	1	5
		-T	Isolator	8	1	9
		-X	Isolator	2	1	3
		-V	Isolator	8	1	9
		-W	Isolator	4	1	5
D-189108	7✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	4	1	5
D-180150	6✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
D-189451	6✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
D-189455	1✓	-A	Isolator	4	1	5
		-B	Isolator	2	1	3
		-C	Isolator	4	1	5

SPECIFICATION

PLANT: SAV
 PROJ: 9S1,
 SPEC: 3-882,
 REV: 3
 DATE: March 4,
 PAGE: 4

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Part</u>	<u>Description</u>	<u>Quantity For</u>		<u>Total Quant.</u>
				<u>2 Valves</u>	<u>Spares</u>	<u>For</u> <u>2 Valves + Spares</u>
D-189456	1 ✓	-A	Isolator	2	1	3
		-B	Isolator	48 3x-7	5	53
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	12	1	13
		-F	Isolator	10	1	11
		-G	Isolator	28 18x-7	3	31
		-H	Isolator	12	1	13
		-J	Isolator	2	1	3
D-189463	5 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	2	1	3
D-189464	2 ✓	-A	Isolator	2	1	3
		-B	Isolator	4	1	5
		-D	Isolator	6	1	7
		-E	Isolator	2	1	3
		-F	Isolator	2	1	3
		-G	Isolator	2	1	3
D-189465	5 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	4	1	5
		-D	Isolator	2	1	3
		-E	Isolator	2	1	3
D-189466	5 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
		-E	Isolator	2	1	3
D-189467	5	-A	Isolator	2	1	3
		-C	Isolator	2	1	3

C = Changed
 2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 5

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Rev.</u>	<u>Part</u>	<u>Description</u>	<u>Quantity For</u>		<u>Total Quantity</u>
				<u>2 Valves</u>	<u>Spares</u>	<u>For</u> <u>2 Valves + Spares</u>
D-189496	4 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	2	1	3
D-189497	3 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
D-189676	3 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	2	1	3
		-D	Isolator	2	1	3
D-189677	2 ✓	-A	Isolator	2	1	3
		-B	Isolator	2	1	3
		-C	Isolator	4	1	5
D-199663		-A	Isolator	2	1	3
		-B	Isolator	2	1	3

B. Isolator Groups for Crating

The above lot of isolators shall be grouped and crated by EN numbers listed below. See Paragraph IX for packaging details.

1. S350-185-19-2 Set of Electrical Isolators
(Alumina) for Drain Valve Assembly

This group consists of the following:

<u>Dwg. No.</u>	<u>Part</u>	<u>Total</u> <u>Quantity</u>
D-187871	-D	5
	-K	3
	-L	34
	-N	5
	-P	5
	-R	12
	-S	3
	-T	5
	-X	2
	-V	5
	-W	3

C = Changed
 2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 6

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-189108	-A	2
	-B	2
	-C	2
	-D	2
	-E	3
D-180150	-A	2
	-B	2
D-189451	-A	2
	-B	2
	-C	2
	-D	2
D-189455	-A	3
	-B	2
	-C	3
D-189456	-A	2
	-B	29
	-C	2
	-D	2
	-E	7
	-F	6
	-G	17
	-H	7
	-J	2
D-189463	-A	2
	-B	2
	-C	2
	-D	2
	-E	2
D-189464	-A	2
	-B	3
	-D	4
	-E	2
	-F	2
	-G	2

C = Changed
 2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 7

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-189465	-A	2
	-B	2
	-C	3
	-D	2
	-E	2
D-189466	-A	2
	-B	2
	-C	2
	-D	2
	-E	2
D-189467	-A	2
	-C	2
D-189496	-A	2
	-B	2
	-C	2
D-189497	-A	2
	-B	2
D-189676	-A	2
	-B	2
	-C	2
	-D	2
D-189677	-A	2
	-B	2
	-C	3
D-199663	-A	2
	-B	2

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 8

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

2. S999-350-19-2 Set of Electrical Isolators
 (Alumina) for Drain Valve Assembly -
 Spare

This group consists of the following:

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-187871	-D	4
	-K	4
	-L	28
	-N	4
	-P	4
	-R	10
	-S	2
	-T	4
	-X	1
	-V	4
	-W	2
D-189108	-A	1
	-B	1
	-C	1
	-D	1
	-E	2
D-180150	-A	1
	-B	1
D-189451	-A	1
	-B	1
	-C	1
	-D	1
D-189455	-A	2
	-B	1
	-C	2

C = Changed
 2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 9

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-189456	-A	1
	-B	24
	-C	1
	-D	1
	-E	6
	-F	5
	-G	14
	-H	6
	-J	1
D-189463	-A	1
	-B	1
	-C	1
	-D	1
	-E	1
D-189464	-A	1
	-B	2
	-D	3
	-E	1
	-F	1
	-G	1
D-189465	-A	1
	-B	1
	-C	2
	-D	1
	-E	1
D-189466	-A	1
	-B	1
	-C	1
	-D	1
	-E	1
D-189467	-A	1
	-C	1

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 3-8823
 REV: 3
 DATE: March 4, 1986
 PAGE: 10

IV. QUANTITY REQUIRED AND CRATING GROUPS (Cont'd)

<u>Dwg. No.</u>	<u>Part</u>	<u>Total Quantity</u>
D-189496	-A	1
	-B	1
	-C	1
D-189497	-A	1
	-B	1
D-189676	-A	1
	-B	1
	-C	1
	-D	1
D-189677	-A	1
	-B	1
	-C	2
D-199663	-A	1
	-B	1

C = Changed
 2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 11

V. MATERIAL OF CONSTRUCTION

A. Material

The material of construction for electrical isolators included in this specification shall be alumina ceramics as shown on the drawings. The properties of the material shall be within the ranges given below. Where the ranges are not given, specified properties are minimum required.

B. Material Properties

Alumina Content	99.5%
Crystal Size, Range	79-985 microinches
Average	473 microinches
Specific Gravity	3.5-3.9
Hardness	74-85 R45N
Surface Finish, As Fired	63 microinches
Ground	20-50 microinches
Water Absorption	None
Gas Permeability	None
Compressive Strength @ 25°C	300-400 kpsi
1000°C	43 kpsi
Flexural Strength @ 25°C	43-55 kpsi
1000°C	17-25 kpsi
Maximum Use Temperature	1200°C
Coefficient of Linear Thermal Expansion, 25-1200°C	4.2-5.0x10 ⁻⁶ /°F
Thermal Conductivity	90-210 BTU-in/°F-ft ² -hr
Thermal Shock Resistance	Good
Dielectric Strength, 1/4" Specimen	180-260 rms volts/mil
Dielectric Constant @ 25°C	8.5-9.5
Volume Resistivity @ 700°C	5.0 x 10 ⁷ ohm-cm ² /cm
1000°C	5.0 x 10 ⁵ ohm-cm ² /cm
Te Value	950°C

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 12

VI. CRITICAL QUALITY REQUIREMENTS

A. Dimensional Tolerances

Unless otherwise specified on the drawing, parts shall meet the following minimum dimensional tolerances:

(D)
(D)

Parallelism:	Considered satisfactory if thickness measured at any point is within the dimensional tolerance
Flatness:	0.006 inch/inch
Concentricity:	1%, 0.006 inch minimum
Camber:	0.006 inch/inch
Edge and Fillet Radii:	0.030 inch maximum

(C)

B. Visual Requirements

Parts shall be uniform in color and texture. Visible blemishes, such as pits, chips, cracks and blisters, shall not be permitted to the extent that the life and usefulness of the parts are impaired. Chip size up to 1/32 inch are allowed. Maximum length of any chip shall not exceed 1/2 inch. If there are more than 3 chips on any part, Du Pont approval is required.

C. Deviation Reports and Vendor Responsibility for On-Time Shipment of Parts

Any deviation to the above specified requirements shall be submitted with complete details, including sketches and explanation of terms and abbreviations used, to Du Pont Engineering Department to the address given in Paragraph XI.D. for determination if this will impair the fit-up, end use or performance of the equipment.

Part rejection from unacceptable deviation or defect shall not be considered an acceptable reason for delay in the shipment of the part. Vendor shall schedule manufacture of parts, allowing adequate time for on time delivery of all parts including those found unacceptable due to deviations or defects.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 13

VI. CRITICAL QUALITY REQUIREMENTS (Cont'd)

D. Vendor Inspection Level

Parts shall be inspected visually and dimensionally 100% by the vendor. All deviations shall be processed as outlined in Para. VI.C. Final inspection of parts by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment. See Para. X.

VII. SPARE BLANKS

The vendor must safely and properly retain in storage, for a period of up to 6 months after completion of order, spare blanks to assure 4-6 week delivery of replacement finished parts in the event that parts are damaged in shipping or handling or are unusable in the assembly of the equipment.

It is required that the number of blanks held in storage be adequate to supply at least one finished part of each kind included in Para. IV.A.

The spare blanks retained in storage, as above, could be the extra blanks that the vendor will normally make in providing the specified quantity of finished parts given in Para. IV.A.

The spare blanks shall be the property of the buyer. The vendor shall ship, use or otherwise dispose of the spare blanks on buyer's specific instructions.

VIII. STATUS REPORT

Vendor shall submit a bi-weekly report on the status of parts on order and the forecast delivery schedule. The report shall be submitted to the address given in Para. XI.D. Vendor shall notify Du Pont, as soon as possible, any impact on the required or previously forecast delivery schedule of the parts.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 14

IX. PACKAGING

The isolators shall be grouped by engineering number, per Paragraph IV.B., packaged in sturdy wood crates with weather protection, and packaging shall be such as to ensure against damage during handling and shipment. An enclosed vehicle shall be used for shipment of the isolators.

X. INSPECTION

A. General

1. Inspection of this equipment by a Du Pont Quality Assurance Field Representative (QAFR) is required prior to shipment in accordance with the following instructions. Notify Quality Assurance Engineering Scheduling at least 48 hours before each inspection is required by telephoning (302) 366-3601.

B. Inspection Schedule

Final inspection, prior to shipment.

C. Inspection Instructions (The following inspections will be performed by the QAFR)

Final inspection, prior to shipment.

1. Review and approve certifications for material, including: chemical analysis, compressive strength per ASTM C773 and dielectric strength per ASTM D116.
2. Visually inspect each item for detrimental defects and sharp edges.
3. Witness the dimensional inspection of one item from each detail 100%. Randomly inspect dimensions of the remaining items. If dimensions are found to be out of tolerance, the sample quantity shall be increased until adequate confidence in the dimensions of the finishes items is developed.
4. Review the vendor's proposed method of packaging for shipment.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 15

XI. DOCUMENTATION

- A. The manufacturer shall prepare a documentation inventory transmittal sheet (listing all documents, and number of pages) and attach to each set of documentation.
- B. Each sheet of documentation shall list Du Pont P.O. number, project number, equipment EN number, and be consecutively numbered.
- C. The Du Pont QAFR shall review documentation packages and sign and date each inventory transmittal sheet signifying acceptance prior to release for shipment.
- D. One (1) set shall be sent by mail, immediately following acceptance by the QAFR per Paragraph XI.C., to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Louviers Building
Newark, DE 19711
ATTN: Mr. E.S. Mazanek

- E. The remaining sets shall be sent at time of shipment as follows:
 - 1. One (1) set, including signed transmittal sheet, shall be included with the shipment. (Identification will be furnished at a later date.)
 - 2. Two (2) sets, including signed inventory transmittal sheet, best way to:

By UPS:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Dunbarton, SC 29808

ATTN: Construction-Material Expediter
Construction Administration Building

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 16

XI. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

By Parcel Post:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

By Air Mail:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

ATTN: QAE-S.B. Hicks

- F. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 17

XI. QUALITY ASSURANCE DOCUMENTATION (Cont'd)

- G. Three copies of the following QA records are required (one copy per transmittal package).
 - 1. Chemical analysis
 - 2. Dielectric strength certificates
 - 3. Compressive strength certificates
 - 4. Deviation reports generated during execution of Paragraph VI.C.

C = Changed
2302W/jel

D = Deleted

N = New

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

DEPARTMENT OF ENERGY
TRACT DE-AC09-78SR00001

(TWX: 810-771-2071)

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913

TEL 803-725-6211

WU: AUGUSTA, GA)

VC: 05202

TO

(415) 592-9440
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR
6	3	86

ORDER NO.
AXC 8823W

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC 11
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DO-E-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

E-11-01 CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

FOR ACCOUNTING PURPOSES ONLY-DO NOT SEND TO VENDOR.

1 SetS350-185-19-2	Isolator - Electrical (Alumina) for Drain Valve Assembly
1 SetS999-350-19-2	Isolator - Electrical (Alumina) for Drain Valve Assembly
1 SetG510-101-55-5	Isolator - Electrical (Alumina) for Test Drain Valve

No change in price
which remains at \$281,131.59

TECHNICAL CONTACT: B. J. Etienne 302-366-2040

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-8823-W A5

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXXXXXXXXX Wilm. DE

ORIGINATOR

1-0-0-0

BUYER

AMOUNT

\$281,131.59

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780 Reference Alteration #2, dated 1/3/86
and change to plant charge code:
mka 8452-AD-03Y
Total cost charged, amounts to \$6,740.00

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2671) TEL 803-725-6211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
01	13	87

ORDER NO.

AXC 8823W A4

TO VC: 05202
Wesgo Division, GTE
477 Harbor Blvd.
Belmont, CA 94002

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM. PACKAGE. CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SDC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER
DD-S-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

B-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION

CASH TERMS

VA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

This alteration issued to correct pricing as shown:

1	EN. G 510-101-55-5	+\$2,000.00
	Previous Total Price	\$281,131.59
	Alt. 6 Increase	2,000.00
	New Total Price	\$283,131.59

SHEET

FINAL

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

BCC: Charge to SRP

Account

DEBT 8452-AD-03Y

PRIORITY RATING/ACM EXECUTED BY

EXECUTED BY Lawrence

XXXXXXXXXX
AUGUSTA, GA.

REQUISITION NUMBERS

951780

3-8823

ORIGINATOR

BUYER

+ \$2,000 AMOUNT

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABC
BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SA
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO. 2139 WHICH AUTHORIZES E.
PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SC
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: A

DEFENSE WASTE PROCESSING FACILITY PROCUREMENT SPECIFICATION FOR ISOLATORS FOR DRAIN VALVE ASSEMBLY

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SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
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C = Changed
2302W/jel

D = Deleted

N = New

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: C

ADDITIONAL QUOTATION REQUIREMENTS

I. TIMING

The following dates have been established to meet the Defense Waste Processing Facility program schedule.

A. Procurement Dates

1. Quotations are due on or before July 12, 1985
2. Place order by August 16, 1985. The vendor will be released to proceed with the manufacture of all items included in the order.

B. Shipping Dates

Time is of the essence, and vendor's quotations are to be based on shipping all parts in each group no later than the dates given below:

<u>Parts in Enng. Group</u>	<u>Reference Paragraph</u>	<u>Shipping Date No Later Than</u>
S350-185-19-2	IV.B.1	February 21, 1986
S999-350-19-2	IV.B.2	April 18, 1986
G510-101-55-5	Page D	January 31, 1986

If the vendor prefers, the same parts included in the above two groups can be finished at the same time. However, the shipping dates given above must be met for all parts in each group. Also, see Para. VI.C. regarding vendor responsibility for on-time delivery of parts in case of part rejection due to unacceptable deviations/defects.

II. SHIPPING INSTRUCTIONS

Shipping instructions will be furnished at a later date.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-8823
REV: 3
DATE: March 4, 1986
PAGE: 0

ADDENDUM

EN G510-101-55-1 Set of Electrical Isolators (Alumina) for Test Drain Valve

The following additional isolators are required for the test drain valve (Reference: Work Request 862838). The cost of rework and the new parts is to be charged to Savannah River Plant Account #8452-AD-03Y.

1. Rework the following parts, as shown:

<u>Original Part</u>	<u>Qty</u>	<u>Rework To</u>
D189467-A	1	Sketch No. 1
D189467-B	1	Sketch No. 2
D189467-C	1	Sketch No. 3
D189467-D	1	Sketch No. 4
D189466-E	1	Sketch No. 5

2. Furnish the following new parts:

<u>Drawing</u>	<u>Rev</u>	<u>Part</u>	<u>Qty</u>	<u>Remarks</u>
D199663	0	-A	1	Part must conform to Sketch No. 6
D199663	0	-B	1	

The above parts must be furnished as soon as possible but no later than January 31, 1986. The parts requiring rework were initially made out of 94% alumina.

Du Pont QAFR inspection of parts prior to shipment is required. Shipping instructions will be furnished later. All of the above parts must be shipped together.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001SAMANAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX. 810-771-2871) TEL 803-725-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
06	17	86

ORDER NO.

AXC761W

VC: 01847

TO

213-459-2930
Stenning Instruments
671 Enchanted Way
Pacific Palisades, CA 90272
Attn: Charles StenningFURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-87

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DDC IN

OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER

DD-8-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 11

8-11-81 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

See Spec

See Body

XXX

CASH TERMS

N30

VIA

Air Freight

FOR

Del.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
1	S350-185-MB-1	Melter - Borescope	\$10,925.00
1	S350-185-MB-2	Melter - Borescope	\$10,925.00
1	S999-350-MB-1	Melter - Borescope	\$10,925.00
1	S999-350-MB-2	Melter - Borescope	\$10,925.00
1	S999-350-SB-1	Melter - Borescope	\$10,925.00
1	S999-350-SB-2	Melter - Borescope	\$10,925.00

Per Spec. 131-761 dated 12/20/85
attached and made part of this order.

Total Firm Price \$65,550.00

This confirms letter order placed 1/10/86
by D. R. Boyens

Per letter quote dated 1/28/86

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		PRIORITY RATING/ACM EXECUTED BY	REQUISITION NUMBERS
ORDER NO.	See Body	EXECUTED BY A. M. Lawrence	131-761
DEST	AXC-761-W	ISSUING POINT XXXXXXXXX Wilm. DE	ORIGINATOR 1-0-0-C
ITEM NO.	GENERAL LEDGER & COST CODE	BUYER	AMOUNT
9S1780			\$65,550.00
mka		DIRECT ALL INQUIRIES TO THE ABOVE BUYER.	
IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.		PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.	
		APPROVED FOR DU PONT

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
06	17	86

ORDER NO.

AXC761W

VC: 01847

TO

213-459-2930
Stenning Instruments
671 Enchanted Way
Pacific Palisades, CA 90272
Attn: Charles StenningFURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATEYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DO-E-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 1)

E-1 (Q) CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

See Spec

See Body

XX

B

CASH TERMS

N30

VA

Air Freight

F.O.B

Del.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

by Charles Stenning

Ship to:
PRC Corp.
151 Center St.
Cape Canaveral, FL 32920
Mark: "For Use on Bechtel
Order #22115"DU PONT INSPECTION IS REQUIRED ON THIS ORDER. IF
INSPECTION DETAILS ARE NOT IN THE ATTACHED
SPECIFICATION, CONTACT THE DESIGNATED DESIGN OR
TECHNICAL CONTACT FOR THE INFORMATION.You are released to purchase all required material
on receipt of this order; however, no shop work is
to be started until approval prints and transmittal
letter with instructions "Fabrication Released"
are received.Vendor to submit required drawings, manuals, etc.
and/or shipping instructions for Du Pont furnished
material immediately to:

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER

NO.

See Body

DEST

AXC-761-W

EXECUTED BY

A. M. Lawrence

ISSUING POINT

XXXXXXXXXX Wilm. DE

ORIGINATOR

131-761

BUYER

AMOUNT

1-0-0-0
\$65,550.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

mka

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLESALE
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2671) TEL 803-725-8211 WU AUGUSTA, GA)

VC: 01847

TO

213-459-2930
Stenning Instruments
671 Enchanted Way
Pacific Palisades, CA 90272
Attn: Charles StenningFURNISH
PACKING
LIST
FOR EACH SHIPMENT

DATE		
MO	DAY	YR
06	17	86

ORDER NO.

AXC761W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DO-E-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 1)

E-11, Q1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

See Spec

See Body

XX

6

CASH TERMS

N30

VIA

Air Freight

F.O.B.

Del.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

"Vendor Print Center 52S (P-9S1780)"
Engineering Department, Design Division,
Louviere Building, Wilmington, Delaware 19898-7152
Express or UPS Newark, Delaware 19711

TECHNICAL CONTACT: R.W. Foster 302-366-3337

PROMISED SHIPPING DATE:

Approval Drawings: 2/8/86

Final Drawings: 4 WARAD

Ship: 2 units-4 WARAD; 4 units-25 WARAD

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

131-761

ORDER
NO.

See Body

EXECUTED BY

A. M. Lawrence

ORIGINATOR

1-0-0-C

DEST

AXC-761-W

ISSUING POINT

AUGUSTA, GA.
XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$65,550.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

mka

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO. 2139 WHICH AUTHORIZES E.I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001
VC: 01847

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2671) TEL 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
06	17	86

ORDER NO	Alt 1
AXC761W	

TO
213-459-2930
Stenning Instruments
671 Enchanted Way
Pacific Palisades, CA 90272
Attn: Charles Stenning

FURNISH
PACKING
LIST
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY
PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF OPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.
DD-211 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER OPS REGULATION 11

DD-211 OR CERTIFIED FOR NATIONAL DEFENSE USE UNDER OPS REGULATION 1

See Spec

CASH TERMS

VA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

MELTER - BOROSCOPE

MODIFY THIS ORDER PER SPECIFICATION 131-761, REV 1, DATED APRIL 4, 1986, ATTACHED AND MADE PART OF THIS ORDER.

Previous Price	\$65,550.00
Alt. 1 Increase	\$3,120.00
New Total Firm Price	\$68,670.00

Per letter quote dated 5/28/86
by Charles Stenning

TECHNICAL CONTACT: R.W. Foster 302-366-3337

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

SHEET

FINAL

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

DEST

AXC-761-W A1

PRIORITY RATING / ACM EXECUTED BY

EXECUTED BY
A. M. Lawrence

ISSUED BY
XXXXX Wilm, DE

REQUISITION NUMBERS

131-761

ORIGINATOR

1-0-0-

BUYER

\$3,120.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

mka

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPT CERTIFICATE NO. 2139 WHICH AUTHORIZES E.I. DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE PRICE PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-761
REV: 1
DATE: April 4, 1986
PAGE: 1

<u>Item No.</u>	<u>Qty</u>	<u>Description</u>														
S350-185-MB-1	6	Melter - Borescope														
S350-185-MB-2																
S999-350-MB-1																
S999-350-MB-2		Delivery Schedule:														
S999-350-SB-1																
S999-350-SB-2																
		<table><tr><th><u>Item</u></th><th><u>Ship Date</u></th></tr><tr><td>S350-185-MB-1</td><td>7/1/86</td></tr><tr><td>S350-185-MB-2</td><td>7/1/86</td></tr><tr><td>S999-350-MB-1</td><td>9/1/86</td></tr><tr><td>S999-350-MB-2</td><td>9/1/86</td></tr><tr><td>S999-350-SB-1</td><td>9/1/86</td></tr><tr><td>S999-350-SB-2</td><td>9/1/86</td></tr></table>	<u>Item</u>	<u>Ship Date</u>	S350-185-MB-1	7/1/86	S350-185-MB-2	7/1/86	S999-350-MB-1	9/1/86	S999-350-MB-2	9/1/86	S999-350-SB-1	9/1/86	S999-350-SB-2	9/1/86
<u>Item</u>	<u>Ship Date</u>															
S350-185-MB-1	7/1/86															
S350-185-MB-2	7/1/86															
S999-350-MB-1	9/1/86															
S999-350-MB-2	9/1/86															
S999-350-SB-1	9/1/86															
S999-350-SB-2	9/1/86															

(C)

The following Du Pont drawings will be shipped to the vendor under separate cover:

W-804866
W-807872

I. GENERAL

This specification covers the borescope portion of the borescope/TV assembly for viewing the melt pool in the DWPF glass melter. The following major subassemblies are being purchased separately. See Attachment 1.

(C)

1. Inconel Tube

An Inconel 690 jacket extends into the melter vapor space. It protects the borescope assembly from the corrosive melter atmosphere.

2. Borescope (Optical and Cooling Portion)

This assembly extends from the bottom of the protective sleeve to the flange connection on the TV camera housing. It includes all the optical components between the melter interior and TV camera housing.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-761
REV: 1
DATE: April 4, 1986
PAGE: 2

3. TV Camera Housing

The housing contains the TV camera and lens for viewing the melter interior. It is located entirely outside the melter.

4. TV Camera Carrier (Remote Insertion) Assembly

The above portions are assembled together on a common framework for installation as a unit. It supports all other components and provides cooling and lens cleaning (purge) air supplies. It includes the means for inserting the optical components into the melter with cooling air already flowing.

II. ENVIRONMENTAL CONDITIONS

Melter gas temperature = 500° - 1000°C (lower 2" of protective sleeve). Upper borescope temperature (elbow section) 50°C.

A. Cooling Air

10 SCFM of 30°C cooling air will enter the borescope assembly through the TV camera box. The borescope design shall direct this flow down the inner portion of the assembly to the lower tip, then back up the outer annular cavity to the exit opening at the top.

Cooling air temperature will be monitored by a small RTD element provided by Du Pont. It shall be mounted by the borescope vendor near the cooling air exit.

Wiring from the RTD will be supported and routed within the borescope housing to the exit flange at the TV camera box.

B. Purge Air

The quartz window at the borescope tip will be subject to glass spatter and condensing salts from the melt pool. A 10 SCFM air purge exiting the protective sleeve at the window serves to inhibit this buildup while providing a non-corrosive environment for the borescope. A water/steam mix will be added to the purge air occasionally to clean the window. The outer borescope housing must be water and steam tight.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-761
REV: 1
DATE: April 4, 1986
PAGE: 3

III. PHYSICAL REQUIREMENTS

Du Pont Drawing W-804866 defines the space envelope available for the borescope assembly. Assembly OD within the protective sleeve = 2.25". The elbow section above the sleeve must be no more than 4" x 4".

- (C) An accurate pattern Inconel tube will be provided to the borescope vendor for fit-up with the borescope assembly. This pattern will remain with the vendor for use with all items on this order.

The borescope will flange mount to the top of the protective sleeve. Flange OD = 3.75". Details are shown on Drawing W-807872.

- (C) The borescope assembly shall include a flexible metal bellows section between the elbow and the TV camera box (see Attachment 2). The bellows section will be provided by Du Pont.

The bellows section provides mounting flexibility between hard bolted components. Optical components should not be anchored within the bellows section but rather be supported from the elbow end. Internal supports from the elbow end are required to:

- Prevent the bellows from touching the optical components.
- Permit RIGID bellows support during shipment.
- Hold the bellows close to the correct position during assembly.

These supports must permit up to 0.25" lateral displacement of the bellows ends during final assembly.

A spacer ring shall be provided around the outside of the outer borescope tube. The purpose of this ring is:

1. Help center borescope in protective sleeve.
2. Reduce vibration induced by purge air flow.

Ring design will be by the borescope vendor and will permit free passage of the purge air between the borescope and protective sleeve.

All internal threaded connections must be secured to prevent loosening due to vibration or thermal effects. Acceptable techniques include epoxy (radiation tolerant), wiring, peening or tack welding.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-761
REV: 1
DATE: April 4, 1986
PAGE: 4

IV. OPTICAL REQUIREMENTS

All optical components must withstand a cumulative radiation dose of 10^8 rads with less than 10% transmission loss. Front surface mirrors with quartz overlay are preferred to prisms.

(C) Viewing axis = 30° off vertical (downward direction).

(C) Field of view $\approx 72^\circ$ centered around viewing axis.

Objective lens = 0.25" diameter.

Vertical optics tube = 1" diameter (minimum).

There will be no iris or motorized optics in the borescope. All iris and lens adjustments (other than initial alignment) are to be in the camera lens and not part of the borescope.

The viewing axis, vertical and horizontal borescope axes all lie in the same vertical plane as shown in Attachment 1. All borescope assemblies are identical, with no "right handed" or "left handed" distinction between them.

V. MATERIAL REQUIREMENTS

All parts of the borescope and particularly the lower tip, will be exposed to high levels of broad spectrum gamma radiation. Cumulative doses to 10^8 rads must be tolerated without loss of function for all materials of construction.

A. Optical parts - see Section IV.

B. Metal Parts

(C) Since the borescope is protected from exposure to the melter atmosphere by the purge air, 300 series low carbon stainless steel is acceptable for all external surfaces. Internal components need not be stainless steel. Vendor shall specify which materials are used.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-761
REV: 1
DATE: April 4, 1986
PAGE: 5

C. Outer Tube

The outer tube of the borescope assembly shall be a sandwich construction composed of concentric stainless steel cylinders separated by a thin ceramic insulating layer.

THE VENDOR SHALL ATTACH TO EACH PIECE OF EQUIPMENT AN EMBOSSED OR ENGRAVED PLASTIC OR STAINLESS STEEL TAG BEARING THE DU PONT ORDER NUMBER AND ENGINEERING NUMBER AS INDICATED.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-761
REV: 1
DATE: April 4, 1986
PAGE: 6

YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING DRAWINGS AS FOLLOWS:

Design Approval Drawings in weeks after receipt of order.
Final Drawings in weeks after return of all Design Approval Drawings.

- A. One reproducible of Design Approval Drawings required.
One reproducible of Final Drawings required.
- B. All drawings, drawing transmittal letters and correspondence must show the following identification:

<u>Plant</u>	Savannah River
<u>Project</u>	9S1780
<u>Du Pont Order No.</u>	AXC-761 -W
<u>EN Numbers</u>	As Applicable

- C. The following information is required for approval:

Layout and orientation
Overall dimensions
Mounting or foundation dimensions
Internal Details

- D. Design Approval Drawings:

These drawings must be submitted before we will release start of fabrication. One print of each drawing will be returned stamped "Approved", "Approved as Noted", or "Not Approved". Fabrication will be released according to a note on the transmittal letter covering the returned prints. Upon receipt of all "approved" and "approved as noted" drawings, vendor shall revise to include all changes and return for our use as Final Drawings. "Not approved" drawings must be corrected and re-submitted for approval.

- E. Final Drawings:

These drawings are for Du Pont design and construction purposes.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU. AUGUSTA, GA)

DATE		
MO	DAY	YR
05	19	86

ORDER NO.
AXC 1248W

VC: 02571

TO

(803) 783-1880
Fluorocarbon
Components Division
P. O. Box 9889
Columbia, SC 29290

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

These Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY DATE	PROMISED SHIPPING DATE	YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SEC 14. OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER. SO-4-1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 11	SO-4-1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1
7/1/86	7/31/86	☒	☐

CASH TERMS	FOB
N30	COLUMBIA, SC

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

THIS IS AN UNPRICED ORDER. IT IS IMPERATIVE THAT YOU FURNISH US WITH A FORMAL QUOTATION BY 6/9/86 showing list, discount and net prices each, terms of payment, cash and FOB point (include terms of payment for freight), estimated weight of total shipment, dates required drawings will be submitted (if applicable), promised shipping date, and any other charges pertaining to this order. FAILURE TO PROVIDE THIS INFORMATION IN A TIMELY MANNER WILL DELAY PAYMENT OF YOUR INVOICE AS THE PURCHASE ORDER CANNOT BE PRICED AND FORWARDED TO ACCOUNTS PAYABLE UNTIL THIS DATA IS RECEIVED IN THIS OFFICE.

You are authorized to proceed to engineer, fabricate and ship material or equipment on this order providing:

1. The terms and conditions on the reverse side of this order are acceptable to you.
2. Shipment can be made as requested by Du Pont.

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY		PRIORITY RATING/ACM EXECUTED BY	REQUISITION NUMBERS
ORDER NO.	See Body	EXECUTED BY K. J. Spry	131-1248
DEST	AXC-1248-W	ISSUING POINT AUGUSTA, GA XXXXXXXXXX Wilm, DE	ORIGINATOR 1-0-0-
ITEM NO.	GENERAL LEDGER & COST CODE	BUYER	AMOUNT \$ 506.50 \$-00

9S1780

mfc

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-78SR00001BRANNAN RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30613
(TWX: 810-771-2671) TEL 803-726-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
05	19	86

ORDER NO.
AXC 1248W

VC: 02571

(803) 783-1880
Fluorocarbon
Components Division
P. O. Box 9889
Columbia, SC 29290FURNISH
PACKING
LIST
FOR EACH SHIPMENTORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-12.

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DOD IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER.
DOD-1 IDENTIFIED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 11

S-11 (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

7/1/86

A ☒B ☐

CASH TERMS

V.A.

P.O.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
	1	S350-185-CR-1 C-Ring - Metal	\$ 34.43
	1	S350-185-CR-2 C-Ring - Metal	\$ 34.43
	1	S999-350-CR-1 C-Ring - Metal	\$ 34.43
	1	S999-350-CR-2 C-Ring - Metal	\$ 34.43
	1	S999-350-CR-3 C-Ring - Metal	\$ 34.43
	1	S999-350-CR-4 C-Ring - Metal	\$ 34.43

SET-UP CHARGE @ \$300.00

Per Spec. 13I-1248 dated 05/08/86
attached and made part of this order.Ship to:
Stenning Instrument Co.
671 Enchantco Way
Pacific Palisades, CA 90272

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO.

See Body

EXECUTED BY

K. J. Spry

ORIGINATOR

1-0-0

DEST

AXC-1248-W

ISSUING POINT

AUGUSTA, GA

XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$ 506.58

\$ 0.00

ITEM NO.

GENERAL LEDGER & COST CODE

951780

mfc

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALE
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE
TANGIBLE PERSONAL PROPERTY AT WHOLE
SALE PRICE WHERE APPLICABLE DIRECTLY TO THE
SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SF00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2871) TEL 803-726-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
05	19	86

ORDER NO.
AXC 1248W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division.

VC: 02571

TO

(803) 783-1880
Fluorocarbon
Components Division
P. O. Box 9889
Columbia, SC 29290

**FURNISH
PACKING
LIST**
FOR EACH SHIPMENT

FROM: Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OIR 1-22
REQUIRED DELIVERY DATE

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DSC IN
ORDERS PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
SD-4-1 NOTIFIED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 11

SD-4-1 ON CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 11

7/1/86

CASH TERMS

VA

F.O.B.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

Vendor to submit required drawings, manuals, etc.
and/or shipping instructions for Du Pont furnished
material immediately to:
"Vendor Print Center 52S (P-9S1780)"
Engineering Department, Design Division,
Louviere Building, Wilmington, Delaware 19898-7152
Express or UPS Newark, Delaware 19711

TECHNICAL CONTACT: R. W. Foster 302-366-3331

TOTAL FIRM PRICE \$506.58

PER QUOTATION #850523-2 DATED 5/28/86 BY J. POWELL

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO

See Body

EXECUTED BY

K. J. Spry

ORIGINATOR

1-0-0-0

DEST

AXC-1248-W

ISSUING POINT

AUGUSTA, GA

Wilm, DE

BUYER

AMOUNT

\$506.58 \$0.00

ITEM NO

GENERAL LEDGER & COST CODE

9S1780

mfc

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-1248
REV:
DATE: May 8, 1986
PAGE: 1

<u>Item No.</u>	<u>Qty</u>	<u>Description</u>
S350-185-CR-1	6	Metal C-Rings Fluorocarbon Model: C2620-03500 RAN Material: 321 sst Free Height: 3/16" Wall Thickness: 0.020" Outside Diameter: 3.500" Internal pressure No heat treatment No coating
S350-185-CR-2		
S999-350-CR-1		
S999-350-CR-2		
S999-350-CR-3		
S999-350-CR-4		

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) AUGUSTA, GA. 30913
(TWX 810-771-2871) TEL 803-725-8211 WU AUGUSTA GA

DATE		
MO	DAY	YR
05	30	86

ORDER NO.
AXC 1281W

EG&G SEALOL
ENGINEERED PRODUCTS DIVISION
P. O. BOX 2158
PROVIDENCE, RI 02905

**FURNISH
PACKING
LIST**
FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.
ATTN: Accounts Payable Division

REQUIRED DELIVERY DATE 7/1/86	PROMISED SHIPMENT DATE 9/15/86	☒ A ☐ B ☐ C	THE PROVISIONS OF DPC REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DPC. CERTIFYING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER DPC-1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPC REGULATION 11 DPC-11 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPC REGULATION 11
CASH TERMS N20	VA	FOB	WARWICK, RI

ITEM NO	QUANTITY	DESCRIPTION	PRICE
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THIS IS AN UNPRICED ORDER. IT IS IMPERATIVE THAT YOU FURNISH US WITH A FORMAL QUOTATION BY 6/20/86 showing LIST, DISCOUNT AND NET PRICES EACH, TERMS OF PAYMENT, cash and FOB point (include terms of payment for freight), estimated weight of total shipment, dates required drawings will be submitted (if applicable), promised shipping date, and any other charges pertaining to this order. FAILURE TO PROVIDE THIS INFORMATION IN A TIMELY MANNER WILL DELAY PAYMENT OF YOUR INVOICE AS THE PURCHASE ORDER CANNOT BE PRICED AND FORWARDED TO ACCOUNTS PAYABLE UNTIL THIS DATA IS RECEIVED IN THIS OFFICE.

You are authorized to proceed to engineer, fabricate and ship material or equipment on this order providing:

1. The terms and conditions on the reverse side of this order are acceptable to you.
2. Shipment can be made as requested by Du Pont.

MARK AND SHIP AS FOLLOWS: TO E. I. DU PONT DE NEMOURS & COMPANY	PRIORITY RATING / ACM EXECUTED BY	REQUISITION NUMBERS
See Body	EXECUTED BY [Signature] K. Spry	131-1281
AXC-1281-W	ISSUED POINT AUGUSTA, GA XXXXXXXXXX Wilm, DE	ORIGINATOR 1-0-0-0
ITEM NO. 9S1780	GENERAL LEDGER & COST CODE	BUYER AMOUNT \$7,400.00 \$5.00
kj		DIRECT ALL INQUIRIES TO THE ABOVE BUYER.
		PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION
		APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT. DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001

SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL 803-725-8211 WJ AUGUSTA, GA)

DATE		
MO	DAY	YR
05	30	86

ORDER NO.
AXC 1281W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice to the above address.

ATTN: Accounts Payable Division.

FURNISH

PACKING

LIST

FOR EACH SHIPMENT

EG&G SEALOL
ENGINEERED PRODUCTS DIVISION
P. O. BOX 2158
PROVIDENCE, RI 02905

REQUIRED DELIVERY

7/1/86

CASH TERMS

VIA

F.O.B.

ITEM NO	QUANTITY	DESCRIPTION	PRICE
1	S999-350-BB-1	Bellows Assembly - Borescope	\$ 1,850.00
1	S999-350-BB-2	Bellows Assembly - Borescope	\$ 1,850.00
1	S999-350-BB-3	Bellows Assembly - Borescope	\$ 1,850.00
1	S999-350-BB-4	Bellows Assembly - Borescope	\$ 1,850.00

Per Spec. 131-1281 dated 05/23/86 attached and made part of this order.

Ship to:
Stenning Instrument Co.
671 Enchanted Way
Pacific Palisades, CA
For Use on Du Pont Order
AXC-761-W

MARK AND SHIP AS FOLLOWS:
TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO
See Body

DEST
AXC-1281-W

SHEET ☐ FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

131-1281

EXECUTED BY

K. J. Spry

ORIGINATOR

1-0-0-0

ISSUING POINT

AUGUSTA, GA XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$7,400.00

\$-00

ITEM NO

GENERAL LEDGER & COST CODE

9S1780

kj

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES AND USE TAXES PURSUANT TO EXEMPTION CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU PONT DE NEMOURS & COMPANY TO PURCHASE TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2871) TEL 703-725-8211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR
05	30	86

ORDER NO.
AXC 1281W

EG&G SEALOL
ENGINEERED PRODUCTS DIVISION
P. O. BOX 2158
PROVIDENCE, RI 02905FURNISH
PACKING
LIST
FOR EACH SHIPMENTORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.PE
REC

DATE

7/1/86

MINIMUM ORDER OF \$500.00

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF DPM. 1.
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DOE-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1)

DOE-1 (CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1)

CASH TERMS

VIA

FOB

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
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Vendor to submit required drawings, manuals, etc.
and/or shipping instructions for Du Pont furnished
material immediately to:
"Vendor Print Center 52S (P-9S1780)"
Engineering Department, Design Division,
Louviere Building, Wilmington, Delaware 19898-7152
Express or UPS Newark, Delaware 19711

TECHNICAL CONTACT: R. W. Foster 302-366-3337

TOTAL FIRM PRICE \$7,400.00

FINAL DRAWINGS:

PER TELEX DATED 6/20/86 BY R. PILKINGTON

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

See Body

DEST

AXC-1281-W

EXECUTED BY

K. J. Spry

ISSUING POINT

AUGUSTA, GA Wilm, DE

ORIGINATOR

1-0-0-0

BUYER

AMOUNT

37,400.00

ITEM NO.

GENERAL LEDGER & COST CODE

9S1780

kj

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E. I. DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-1281
REV: 1
DATE: September 16, 1986
PAGE: 1

<u>Engineering No.</u>	<u>Qty</u>	<u>Description</u>
S999-350-BB-1	1	Borescope Bellows Assembly
S999-350-BB-2	1	The assembly is to be the same as provided on
S999-350-BB-3	1	previous Du Pont Order AX-0724157 except for
S999-350-BB-4	1	bolt hole pattern on flange.

Applicable vendor drawings are as follows:

<u>Drawing No.</u>	<u>Description</u>
73255	Bellows Assembly
73258	Bellows Sub-assembly
73259	Flange (marked)
73260	End fitting
73261	End fitting

The above drawings are attached and made part of this order.

Bellows and flange material = 316 sst

(N)

The bellows assembly shall be supported during shipment so that the overall free length ("operating length" on vendor drawing #53255) is 5.25" upon arrival.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-1281
REV: 1
DATE: September 16, 1986
PAGE: 2

YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING CONSTRUCTION DIMENSION DRAWINGS IN WEEKS AFTER RECEIPT OF PURCHASE ORDER.

- A. One reproducible is required for Du Pont design and construction purposes.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

<u>Plant</u>	<u>Savannah River</u>
<u>Project</u>	<u>9S1780</u>
<u>Du Pont Order No.</u>	<u>AXC-1281-W</u>
<u>EN Numbers</u>	<u>As Applicable</u>

C. The following information is required.

Overall dimensions
Mounting dimensions

Fabrication is released upon receipt of purchase order.

ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY

INCORPORATED

P. O. Box 6090

NEWARK, DE 19714-6090

ENGINEERING DEPARTMENT

dp 0002336

CC: S. D. Kaplan - SRP 704S
K. O. Noblett - SRP 704S
D. R. Adkins - SRP 742A
J. D. Gutmann, Jr. - AED
R. A. Epperly - AED
IC 33 (2)

June 19, 1987

R. G. BAXTER
SAVANNAH RIVER PLANT
704S

PROJECT 9S1780 - SAVANNAH RIVER PLANT
DEFENSE WASTE PROCESSING FACILITY
TYPE "B" THERMOCOUPLE ORDER AXC 2185W
PRECIOUS METALS PROCUREMENT

Please arrange for transfer of platinum and rhodium from the DOE stockpile to Johnson-Matthey Corp. for use on the subject order (attached).

Quantities required: Platinum - 5286 grams
Rhodium - 1291 grams

This order covers field installed type B thermocouples for the No. 2 melter.

Excess material is to be returned to the DOE stockpile after fabrication.

Please call if you have any questions.

ATOMIC ENERGY DIVISION

R. W. Foster
Project Engineer

RWF/rcw
rwf2:82

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913

(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR

ORDER NO.

AXC 2185W

VC: 02116

TO

(408) 732-9051
Johnson Matthey, Inc.
777 East Evelyn Avenue
Sunnyvale, CA 94086FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING
DATEP
R
I
O
R
I
T
YYOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BDC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DATE: CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11

E. I. DU PONT DE NEMOURS & COMPANY IS A CERTIFIED SMALL BUSINESS CONCERN

02/01/88

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
1	S999-3271-TE-A	Thermocouple	
1	S999-3271-TE-B	Thermocouple	
1	S999-3272-TE-A	Thermocouple	
1	S999-3272-TE-B	Thermocouple	
1	S999-3273-TE-A	Thermocouple	
1	S999-3273-TE-B	Thermocouple	
1	S999-3274-TE-A	Thermocouple	
1	S999-3274-TE-B	Thermocouple	
1	S999-3275-TE-A	Thermocouple	
1	S999-3275-TE-B	Thermocouple	
1	S999-3276-TE-A	Thermocouple	

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

9S1780

clb

131-2185

EXECUTED BY

N. A. Cusick

ORIGINAL

6/23

1-0-0-0

ORDER
NO

See Body

DEST

AXC-2185-W

ISSUING POINT

XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E I
DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

(TWX 810-771-2671)

SAVANNAH RIVER PLANT

P.O. BOX 117 (13) Augusta, GA. 30913

TEL 803-725-6211

WU AUGUSTA, GA)

VC: 02116

TO

(408) 732-9051
Johnson Matthey, Inc.
777 East Evelyn Avenue
Sunnyvale, CA 94086

FURNISH
PACKING
LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR

ORDER NO.

AXC 2185W

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE. CORRESPONDENCE AND INVOICE

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN
OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DOE-11 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 1)

E-11 (1) (1) CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

02/01/88

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
1	S999-3276-TE-B	Thermocouple	
1	S999-4085-TE-A	Thermocouple	
1	S999-4085-TE-B	Thermocouple	
1	S999-4085-TE-C	Thermocouple	
1	S999-2930-TE	Thermocouple	
1	S999-2920-TE	Thermocouple	
1	S999-2921-TE	Thermocouple	
1	S999-2931-TE	Thermocouple	
1	S999-2942-TE	Thermocouple	
1	S999-2943-TE	Thermocouple	
1	S999-2944-TE	Thermocouple	

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO

See Body

DEST

AXC-2185-W

EXECUTED BY

N. A. Cusick

ISSUING POINT

XXXXXXX Wilm, DE

ORIGINATOR

BUYER

AMOUNT

9S1780
131-2185

clb

1-0-0-C

\$.00

ITEM NO GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAVANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX 810-771-2671) TEL 803-725-6211 WU. AUGUSTA, GA)

DATE		
MO	DAY	YR

ORDER NO.

AXC 2185W

VC: 02116

TO

(408) 732-9051
Johnson Matthey, Inc.
777 East Evelyn Avenue
Sunnyvale, CA 94086FURNISH
PACKING

LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND
INVOICEPlease mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82
REQUIRED DELIVERY DATEPROMISED SHIPPING
DATE

02/01/88

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN
OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DO NOT CERTIFY FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11

E-11: 01 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

B ☐

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
1	S999-2948-TE	Thermocouple	
1	S999-2947-TE	Thermocouple	
1	S999-2949-TE	Thermocouple	
1	S999-2955-TE	Thermocouple	
1	S999-2956-TE	Thermocouple	
1	S999-2960-TE	Thermocouple	
1	S999-2961-TE	Thermocouple	
1	S999-2962-TE	Thermocouple	
1	S999-2963-TE	Thermocouple	
1	S999-2968-TE	Thermocouple	
1	S999-2969-TE	Thermocouple	

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

9S1780
13I-2185

clb

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

See Body

EXECUTED BY

N. A. Cusick

ORIGINATOR

1-0-0-0

DEST

AXC-2185-W

ISSUING POINT

XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYERPURCHASE EXEMPT FROM SOUTH CAROLINA
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO 2139 WHICH AUTHORIZES E
I. DU PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-76SR00001

VC: 02116

TO

(408) 732-9051
Johnson Matthey, Inc.
777 East Evelyn Avenue
Sunnyvale, CA 94086

SAVANNAH RIVER PLANT

P.O. BOX 117 (13) Augusta, GA. 30613

(TWX 810-771-2671) TEL 803-725-6211 WU AUGUSTA, GA)

DATE		
MO	DAY	YR

ORDER NO.

AXC 2185W

ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE, CORRESPONDENCE AND INVOICE.

Please mail 2 copies of your invoice
to the above address.

ATTN: Accounts Payable Division

**FURNISH
PACKING
LIST**
FOR EACH SHIPMENT

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-8.

REQUIRED DELIVERY

PROMISED SHIPPING
DATE

02/01/88

P
R
I
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R
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T
Y

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BOC IN
OBTAINING PRODUCTS, MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DO-E-1 (CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 1)

A ☒ X

B-11 Q1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

B ☐

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
1	S999-2970-TE	Thermocouple	
1	S999-2971-TE	Thermocouple	
1	S999-3800-TE	Thermocouple	
1	S999-3801-TE	Thermocouple	
1	S999-3802-TE	Thermocouple	
1	S999-3803-TE	Thermocouple	
1	S999-2972-TE	Thermocouple	
1	S999-2973-TE	Thermocouple	
1	S999-2974-TE	Thermocouple	
1	S999-2975-TE	Thermocouple	

Per Spec. 13I-2185 dated 06/19/87

SHEET

☐ FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO

See Body

DEST

AXC-2185-W

EXECUTED BY

N. A. Cusick

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

1-0-0-0

BUYER

AMOUNT

\$.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

 U.S. DEPARTMENT OF ENERGY
 CONTRACT DE-AC09-76SR00001

(TWX 810-771-2671) TEL 803-725-8211 WU AUGUSTA GA)

VC: 02116

TO

 (408) 732-9051
 Johnson Matthey, Inc.
 777 East Evelyn Avenue
 Sunnyvale, CA 94086

 FURNISH
 PACKING
 LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR

ORDER NO.

AXC 2185W

 ORDER NUMBER AND EQUIP PC NUMBERS MUST BE PLAINLY
 SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
 INVOICE

 Please mail 2 copies of your invoice
 to the above address

ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

 PROMISED SHIPPING
 DATE

02/01/88

 YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF BDC IN
 OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
 DOWE-1 CERTIFIED FOR NATIONAL DEFENSE
 USE UNDER DPS REGULATION 11

B-11 Q1 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

attached and made part of this order.

 Ship to:
 See Specification

Quality surveillance by a Du Pont Representative of items furnished on this order is required. If surveillance details are not in the attached specification, you will receive a letter shortly describing them. The Du Pont Representative will contact you to schedule surveillance visits. If not contacted, please notify (by telephone) at least five (5) days before surveillance is required:

E. I. du Pont de Nemours & Co., Inc.
 Engineering Department
 Quality Assurance & Materials Management Engrg.
 (302) 451-0200

The supplier will make available to the Du Pont representative a complete set of supplier or Du Pont drawings for use at the time of the inspections. These drawings must show the latest rev-

SHEET

FINAL

PRIORITY RATING/ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER NO

See Body

EXECUTED BY

N. A. Cusick

ORIGINATOR

1-0-0-0

DEST

AXC-2185-W

ISSUING POINT

XXXXXXXXXX Wilm, DE

BUYER

AMOUNT

\$.00

ITEM NO

GENERAL LEDGER & COST CODE

 DIRECT ALL INQUIRIES TO THE ABOVE
 BUYER.

PURCHASE EXEMPT FROM SOUTH CAROLINA S
 AND USE TAXES PURSUANT TO EXEMP.
 CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU
 PONT DE NEMOURS & COMPANY TO PURCHASE ALL
 TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
 PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
 CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 3-6852
REV: 3
DATE: February 18, 1986
PAGE: 9

By Air Mail:

E.I. du Pont de Nemours & Company, Inc.
Savannah River Plant
Construction Project Manager
Augusta, GA 30913

ATTN: Construction-Material Expediter
Construction Administration Building

3. One (1) copy of signed inventory transmittal sheet (by mail) to:

E.I. du Pont de Nemours & Company, Inc.
Engineering Department
Quality Assurance Engineering
Wilmington, DE 19898

ATTN: QAE-S.B. Hicks

- F. The Du Pont QAFR shall verify transmittal of these documents and state verification in the night message.
- G. Three copies of the following QA records are required (one copy per transmittal package).
1. Chemical analysis
 2. Dielectric strength certificates
 3. Compressive strength certificates
 4. Deviation reports generated during execution of Paragraph VI.C.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY

CONTRACT DE-AC09-78SR00001

(TWX 810-771-2871) TEL 803-725-6211 WU AUGUSTA GA)

VC: 02116

TO

(408) 732-9051
Johnson Matthey, Inc.
777 East Evelyn Avenue
Sunnyvale, CA 94086

FURNISH
PACKING

LIST

FOR EACH SHIPMENT

DATE		
MO	DAY	YR

ORDER NO.

AXC 2185W

ORDER NUMBER AND EQUIP. PC NUMBERS MUST BE PLAINLY SHOWN ON EACH ITEM PACKAGE CORRESPONDENCE AND INVOICE

Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-82

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPS REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF SDC IN
OBTAINING PRODUCTS MATERIALS AND SERVICES NEEDED TO FILL THIS ORDER
DPS 1-11 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPS REGULATION 11

8-11 01 CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPS REGULATION 1

02/01/88

AXX

B

CASH TERMS

VIA

FOB

ITEM NO	QUANTITY	DESCRIPTION	PRICE
---------	----------	-------------	-------

ision number & shall include all approval comments
as marked by Du Pont.

When major components or services are obtained
from subsuppliers, the Du Pont Representative will
inspect these items at the point of manufacture. It
is the prime supplier's responsibility to include
Du Pont surveillance & notification requirements in
suborders & to notify Du Pont at the above address
upon placement of such orders. It is also the prime
supplier's responsibility to arrange for drawings
to be used by the Du Pont Representative at the
subsupplier's location.

The supplier or subsupplier is obligated to
perform all activities in accordance with all
requirements of the purchase order, regardless of
whether the Du Pont Representative elects to per-
form or waive any surveillance. The performance of
surveillance by the Du Pont Representative does not
relieve the supplier or subsupplier of responsibil-
ity for, among other things, meeting specification,
quality, workmanship, and performance requirements.

TECHNICAL CONTACT: R. W. Foster 302-366-3337

SHEET

FINAL

PRIORITY RATING / ACM EXECUTED BY

REQUISITION NUMBERS

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER

NO

See Body

DEST

AXC-2185-W

EXECUTED BY

N. A. Cusick

ISSUING POINT

XXXXXX Wilm, DE

ORIGINATOR

BUYER

AMOUNT

9S1780

clb

131-2185

1-0-0-0

\$.00

ITEM NO

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE BUYER

PURCHASE EXEMPT FROM SOUTH CAROLINA SALES
AND USE TAXES PURSUANT TO EXEMPTION
CERTIFICATE NO 2139 WHICH AUTHORIZES E I DU
PONT DE NEMOURS & COMPANY TO PURCHASE ALL
TANGIBLE PERSONAL PROPERTY AT WHOLESALE AND
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 131-2185
 REV:
 DATE: June 19, 1987
 PAGE: 1

<u>Engg. No. (EN)</u>	<u>Qty</u>	<u>Description</u>
S999-3271-TE-A	15	Platinum Type "B" sheathed thermocouple per attached general specification, except as follows: Sealed transition to 22" insulated (glass over glass) copper extension leads. Transition O.D. $\leq$ 0.1875".
S999-3271-TE-B		
S999-3272-TE-A		
S999-3272-TE-B		
S999-3273-TE-A		
S999-3273-TE-B		
S999-3274-TE-A		
S999-3274-TE-B		
S999-3275-TE-A		
S999-3275-TE-B		
S999-3276-TE-A		
S999-3276-TE-B		
S999-4085-TE-A		
S999-4085-TE-B		
S999-4085-TE-C		

All platinum and rhodium will be supplied from the U.S. government stockpile by separate transfer authorization. Johnson-Matthey shall confirm unit quantities as follows:

<u>Wire Only</u>	<u>Wire & Sheath</u>
Platinum: 0.4312 gram/inch	3.1320 grams/inch
Rhodium: 0.0905 gram/inch	0.7657 grams/inch

Lengths and locations are as follows:

<u>Item</u>	<u>Sheath* Length</u>	<u>T/C Location</u>
3271-A,B	104"	Melt Pool-Upper (XH1)
3273-A,B	114"	Melt Pool-Middle (XH3)
3275-A,B	124"	Melt Pool-Lower (XH5)
3272-A,B	104"	Melt Pool-Upper (XH2)
3274-A,B	110"	Melt Pool-Middle (XH4)
3276-A,B	124"	Melt Pool-Lower (XH6)
4085-A,B,C	60"	Vapor Space (XH7)

*To top of transition joint

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 131-2185
 REV:
 DATE: June 19, 1987
 PAGE: 2

<u>Engg. No. (EN)</u>	<u>Qty</u>	<u>Description</u>						
S999-2930-TE	28	Platinum Type "B" sheathed thermocouple per attached general specification. Heat shrink sleeve (Raychem Type RNF-100, 1/4") shall be applied over the wiring end of the sheath (opposite the junction end). Sleeve shall extend 1/2" beyond the sheath. Raychem address is: Raychem Corporation 300 Constitution Drive Menlo Park, CA 94025 (415) 329-3860 All platinum and rhodium will be supplied from the U.S. government stockpile by separate transfer authorization. Johnson-Matthey shall confirm unit quantities as follows:						
S999-2920-TE								
S999-2921-TE								
S999-2931-TE								
S999-2942-TE								
S999-2943-TE								
S999-2944-TE								
S999-2948-TE								
S999-2947-TE								
S999-2949-TE								
S999-2955-TE								
S999-2956-TE								
S999-2960-TE								
S999-2961-TE								
S999-2962-TE								
S999-2963-TE								
S999-2968-TE								
S999-2969-TE								
S999-2970-TE								
S999-2971-TE								
S999-3800-TE								
S999-3801-TE								
S999-3802-TE								
S999-3803-TE								
S999-2972-TE								
S999-2973-TE								
S999-2974-TE								
S999-2975-TE								
		<table><tr><th><u>Wire Only</u></th><th><u>Wire & Sheath</u></th></tr><tr><td>Platinum: 0.4312 gram/inch</td><td>3.1320 grams/inch</td></tr><tr><td>Rhodium: 0.0905 gram/inch</td><td>0.7657 grams/inch</td></tr></table>	<u>Wire Only</u>	<u>Wire & Sheath</u>	Platinum: 0.4312 gram/inch	3.1320 grams/inch	Rhodium: 0.0905 gram/inch	0.7657 grams/inch
<u>Wire Only</u>	<u>Wire & Sheath</u>							
Platinum: 0.4312 gram/inch	3.1320 grams/inch							
Rhodium: 0.0905 gram/inch	0.7657 grams/inch							
		Lengths and locations are as follows:						

<u>Item</u>	<u>Sheath Length</u>	<u>Heat Shrink Sleeve Length</u>	<u>T/C Location</u>
2930	44"	12"	Electrode (CC1)
2920	44"	12"	Electrode (CC2)
2921	44"	12"	Electrode (CC3)
2931	44"	12"	Electrode (CC4)
*2942	13"	7"	Drain Valve Zone 2 (HH6)
*2943	13"	7"	Drain Valve Zone 2 (HH7)
*2944	12"	7"	Drain Valve Zone 3 (HH8)
*2948	12"	7"	Drain Valve Zone 3 (HH9)
*2947	16"	11"	Drain Valve Zone 4 (HH10)

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

9 of 9

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 13I-2185
 REV:
 DATE: June 19, 1987
 PAGE: 3

<u>Item</u>	<u>Sheath Length</u>	<u>Heat Shrink Sleeve Length</u>	<u>T/C Location</u>
*2949	12"	7"	Drain Valve Zone 4 (HH11)
*2955	15"	7"	Drain Valve Zone 5 (HH12)
*2956	15"	7"	Drain Valve Zone 5 (HH13)
2960	43"	7"	Dome Heater (XF1)
2961	43"	7"	Dome Heater (XF2)
2962	39"	7"	Dome Heater (XF3)
2963	39"	7"	Dome Heater (XF4)
2968	39"	7"	Dome Heater (XF5)
2969	39"	7"	Dome Heater (XF6)
2970	43"	7"	Dome Heater (XF7)
2971	43"	7"	Dome Heater (XF8)
3800	43"	7"	Dome Heater (XF9)
3801	43"	7"	Dome Heater (XF10)
3802	39"	7"	Dome Heater (XF11)
3803	39"	7"	Dome Heater (XF12)
2972	39"	7"	Dome Heater (XF13)
2973	39"	7"	Dome Heater (XF14)
2974	43"	7"	Dome Heater (XF15)
2975	43"	7"	Dome Heater (XF16)

*Wire Extension Length Beyond Sheath = 4" for these items

Shipping Address:

Items 2942, 2943, 2944, 2948, 2947, 2949, 2955 and 2956 shall be shipped to the following address:

MECO Engineered Products, Inc.
 3 Meco Circle
 Wilmington, DE 19804

Attn: Albert Greenland

Mark: For Use on Du Pont Order AXC-²³⁸⁸~~LATER~~-W"

All other items shall be shipped to the Savannah River Plant, address by M&L.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-2185
REV:
DATE: June 19, 1987
PAGE: 4

Quality Assurance Documentation, including all radiograph films, shall be sent to the following address:

E. I. du Pont de Nemours & Co., Inc.
Engineering Department, Louviers Building 3335
P. O. Box 6090
Newark, DE 19714-6090

Attn: R. W. Foster

THE VENDOR SHALL ATTACH TO EACH PIECE OF EQUIPMENT AN EMBOSSED OR ENGRAVED PLASTIC OR STAINLESS STEEL TAG BEARING THE DU PONT ORDER NUMBER AND ENGINEERING NUMBER AS INDICATED.

- SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 131-2185
REV:
DATE: June 19, 1987
PAGE: 5

GENERAL TYPE "B" THERMOCOUPLE SPECIFICATION

1. Premium (low offset) Type "B" wire - 70% Pt-30% Rh, 94% Pt-6% Rh, #20 AWG (0.032") wires ungrounded, in MgO insulated sheath.
2. Sheath 0.1875 inch o.d., .020 inch wall - platinum 80%, rhodium 20%.
3. Wire extension beyond the sheath - 2 inches, except as noted elsewhere in specification. (Mechanical protection required during shipment).
4. Insulation - high purity magnesium oxide.

Purity greater than 99.4% MgO.

Max. Impurities:

SiO ₂	Less than 0.2%
Fe ₂ O ₃	Less than 0.1%
CaO	Less than 0.3%
Al ₂ O ₃	Less than 0.1%
B, Cd, C, S	Less than 0.003% each

5. No sulfur bearing lubricants are to be used in wire drawing or swaging.
6. Compaction greater than 83% as measured by ASTM D2771-83, Method B.
7. Evacuate, fill with argon to 0.25 atm absolute pressure, hermetically seal with glass, overcoated with epoxy for protection.
8. Insulation leakage resistance to sheath of completed T/C must be greater than 1000 megohms at 300°C, 500V dc measured in accordance with ASTM E-780-81.
9. Inspect and test per ASTM 235-82, Sections 6.3, 6.4, 6.5, 6.6 and 6.8, except radiographic inspection shall cover entire length (in overlapping sections) and junction location shall be 0.0625" to 0.125" from end seal. Visual inspection of the radiographs shall assure wire separation and insulation uniformity (no voids, inclusions, cracks, etc.) and no abrupt wire twisting (radiograph wire shadows within 5° of thermocouple axis) along the entire thermocouple length. All radiograph films shall be supplied to Du Pont with identification of thermocouple no., location and orientation (0° to 90°).

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 131-2185
REV:
DATE: June 19, 1987
PAGE: 6

10. Signed and dated documentation shall be provided by the vendor certifying conformance to general specification sections 1 through 8, for each thermocouple.
11. Du Pont inspection and approval of the radiographs at the vendor's shop shall be required prior to shipment. Failure to meet the criteria in Section 9 shall be cause for rejection of the thermocouple.

PURCHASE ORDER

E. I. du Pont de Nemours & Co. (Inc.)

U.S. DEPARTMENT OF ENERGY
CONTRACT DE-AC09-76SR00001SAMANNAH RIVER PLANT
P.O. BOX 117 (13) Augusta, GA. 30913
(TWX: 810-771-2871) TEL 803-725-8211 WU: AUGUSTA, GA)

DATE		
MO	DAY	YR
5	19	87

ORDER NO. **A11 2**
AXC 2101W

VC: 06956

(302) 999-0121

MECO Engineered Products, Inc.
3 MecO Circle
Boxwood Industrial Park
Wilmington, DE 19804FURNISH
PACKING
LIST

FOR EACH SHIPMENT

ORDER NUMBER AND EQUIP. PC. NUMBERS MUST BE PLAINLY
SHOWN ON EACH ITEM, PACKAGE, CORRESPONDENCE AND
INVOICE.Please mail 2 copies of your invoice
to the above address.
ATTN: Accounts Payable Division.

Please Furnish Materials and/or Services Subject to Conditions and Instructions Listed on OSR 1-12

REQUIRED DELIVERY

PROMISED SHIPPING

DATE

05/15/87

6/15/87

A ☒YOU ARE REQUIRED TO FOLLOW THE PROVISIONS OF DPM REGULATION 1 AND OF ALL OTHER APPLICABLE REGULATIONS AND ORDERS OF EOC IN
OBTAINING PRODUCTS, MATERIALS, AND SERVICES NEEDED TO FILL THIS ORDER.
EO-111 CERTIFIED FOR NATIONAL DEFENSE
USE UNDER DPM REGULATION 11

6-111 IS CERTIFIED FOR NATIONAL DEFENSE USE UNDER DPM REGULATION 1

CASH TERMS

VIA

F.O.B.

N30

Wilm. DE

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
----------	----------	-------------	-------

MODIFY THIS ORDER TO REFLECT CHANGES AS MARKED

Per Spec. 131-2101 Rev. 2 dated 05/11/87
attached and made part of this order.

TECHNICAL CONTACT: R. W. Foster 302-366-3337

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

TOTAL FIRM PRICE \$9,872.80

Final Drawings - 5/22/87

Per vendor quote dated 5/5/87 by Al Greenland

SHEET

FINAL

MARK AND SHIP AS FOLLOWS:

TO E. I. DU PONT DE NEMOURS & COMPANY

ORDER
NO.

DEST

AXC-2101-W A2

PRIORITY RATING / ACM EXECUTED BY

EXECUTED BY

N. A. Cusick

ISSUING POINT

XXXXXXX Wilm, DE

REQUISITION NUMBERS

951780

clb

131-2101

ORIGINATOR

R. A. Fort - 5/11-0-0-

BUYER

AMOUNT

\$0.00

ITEM NO.

GENERAL LEDGER & COST CODE

DIRECT ALL INQUIRIES TO THE ABOVE
BUYER.PURCHASE EXEMPT FROM SOUTH CAROLINA SAL
AND USE TAXES PURSUANT TO EXEMPT
CERTIFICATE NO. 2139 WHICH AUTHORIZES E.I.
DU PONT DE NEMOURS & COMPANY TO PURCHASE A
TANGIBLE PERSONAL PROPERTY AT WHOLESALE A
PAY TAX WHERE APPLICABLE DIRECTLY TO THE SOUTH
CAROLINA TAX COMMISSION.

APPROVED FOR DU PONT

IF SHIPPING CHARGES ARE FOR DUPONT ACCOUNT, DO NOT INSURE SHIPMENT.

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 13I-2101
 REV: 2
 DATE: May 11, 1987
 PAGE: 1

<u>Engg. No. (EN)</u>	<u>Qty</u>	<u>Description</u>
S350-999-TF-1	3	Multiple Thermocouple Seal Fitting Conax Type: MHM-187-A-6-G Material: 303 sst Seal Material: Grafoil Thermocouple Diameter: 0.187" Thread: Type A Number of Elements Sealed: 6 Mounting Thread: 3/4" NPTM
Note to Construction: For use with melt pool thermocouples (3271, 3273, 3275), (3272, 3274, 3276) and 1 spare.		
S350-999-TF-2	2	Multiple Thermocouple Seal Fitting Conax Type: MHM-187-A-3-G Material: 303 sst Seal Material: Grafoil Thermocouple Diameter: 0.187" Thread: Type A Number of Elements Sealed: 3 Mounting Thread: 3/4" NPTM
Note to Construction: For use with thermocouples 4085(3) and 1 spare.		
S350-999-TF-3	4	Multiple Thermocouple Seal Fitting Conax Type: MHM-250-A-2-G Material: 303 sst Seal Material: Grafoil Thermocouple Diameter: 0.250" Thread: Type A Number of Elements Sealed: 2 Mounting Thread: 3/4" NPTM
Note to Construction: For use with thermocouples (2953, 2954), (2753, 2951), (2754, 2952) and 1 spare.		

SPECIFICATION

PLANT: SAVANNAH RIVER
 PROJ: 9S1780
 SPEC: 13I-2101
 REV: 2
 DATE: May 11, 1987
 PAGE: 2

Engg. No. (EN)	Qty	Description
S350-999-TF-4	32	Single Element Packing Gland Conax Type: PG2-250-A-G Seal Material: Grafoil Mounting Thread: 1/4" NPTM

Note to Construction: For use with thermocouples 2940(2), 2941(2), 2920, 2921, 2930, 2931, 2960, 2961, 2962, 2963, 2968, 2969, 2970, 2971, 3800, 3801, 3802, 3803, 2972, 2973, 2974, 2975, 2951, 2952, 2953, 2954, 2753, 2754 and 2 spares.

S350-999-TF-5	30	Type B Miniature Thermocouple Head & Packing Gland Conax Type: B2W & PG2-250-A-G 2-wire, weather-proof construction Grafoil packing seal Neoprene grommet and "O" ring
---------------	----	--

Note to Construction: For use with thermocouples 2940, 2941, 2920, 2921, 2930, 2931, 2960, 2961, 2962, 2963, 2968, 2969, 2970, 2971, 3800, 3801, 3802, 3803, 2972, 2973, 2974, 2975, 2951, 2952, 2953, 2954, 2753, 2754 and 2 spares.

S350-999-TF-6	8	Spring Loaded Thermocouple Mounting & Head Assembly Thermocouple Diameter: 0.250" SST fittings and Conax B2W head Mounting Connection: 1/2" NPTM Insertion lengths are shown below:
---------------	---	---

(C)

(C)

(N)

Thermocouple	Insertion Length	T/C Sheath Length
2942, 2943	5-17/32"	13"
2944, 2948	4-3/4"	12"
2947	4-11/16"	16"
2955, 2956	8-3/32"	15"
2949	4-11/16"	12"

The thermocouples for this equipment shall be supplied to the fittings vendor for assembly before shipment to the plant.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 13I-2101
REV: 2
DATE: May 11, 1987
PAGE: 3

Note to Construction: For use with thermocouples 2942, 2943, 2944, 2947, 2948, 2949, 2955, and 2956.

THE VENDOR SHALL ATTACH TO EACH PIECE OF EQUIPMENT AN EMBOSSED OR ENGRAVED PLASTIC OR STAINLESS STEEL TAG BEARING THE DU PONT ORDER NUMBER AND ENGINEERING NUMBER AS INDICATED.

SPECIFICATION

PLANT: SAVANNAH RIVER
PROJ: 9S1780
SPEC: 131-2101
REV: 2
DATE: May 11, 1987
PAGE: 4

YOUR QUOTATION MUST STATE YOUR SCHEDULE FOR SUBMITTING CONSTRUCTION DIMENSION DRAWINGS IN WEEKS AFTER RECEIPT OF PURCHASE ORDER.

- A. One reproducible is required for Du Pont design and construction purposes. Two legible copies may be submitted for 8-1/2" x 11" or 11" x 17" drawings.
- B. All drawings, drawing transmittal letters, and correspondence must show the following identification:

Plant	Savannah River
Project	9S1780
Du Pont Order No.	AXC-2101-W
EN No.	S350-999-TF-6

- C. The following information is required:

Layout and orientation
Overall dimensions

Fabrication is released upon receipt of purchase order.

DATE

FILMED

8/3 /94

END