MASTER

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SUBJECT: HRT Process Flowsheets — Revised Edition

TO: Distribution

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Summary

Revised editions of the HRT flowsheets are presented. The Waste and Vent System Flowsheet has been completely redrawn as two sheets, Parts A and B.

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HRT PROCESS FLOWSHEETS

This fifth revision to CF 55-5-156 presents the revised HRT flowsheets (excluding Chemical Processing). One or more sets of revisions have been made to all the flowsheets since this memorandum was last issued in February, 1959. These revisions primarily cover such items as re-location of freezer units on the lines, corrections to the numbering of lines, valves or instruments, and the addition of a few new lines in the service areas. The major change in this fifth revision of the memorandum is that the overcrowded Waste and Vent System Flowsheet, D-18309, has been completely redrawn as two sheets, Parts A and B, and assigned new drawing numbers, D-36722 and D-36723.

A general description of the operation of the reactor system was given in the third revision to CF 55-5-156, issued in January, 1957. This explanation is adequate in a broad and general sense to describe how the reactor system was designed to operate. Subsequent events, such as the appearance of the hole in the reactor core wall and the presence of uranium in the blanket system, have resulted in some marked deviations in the method of operation. Further, the procedures are varied from time to time to accommodate a leaking valve, a poorly performing pulsafeder pump, etc., and the operating conditions of pressure, temperature, and concentrations are varied in connection with the experiments being performed. For these reasons a detailed discussion of the current operational procedures is judged to be outside the scope of this particular issue of the flowsheets.

In connection with the above, the equipment schedule included in previous issues of CF 55-5-156 has been omitted from this edition. The schedule permitted one unfamiliar with the flowsheets, by following the above-mentioned description of operation, to locate a piece of equipment by the coordinate system. The schedule has only limited utility to those already familiar with the system.

The following flowsheets are included:

Flowsheet Title	Dwg. No.	Date Last Revision Approved
Flowsheet Identification Code	D-18330 a	-
Low Pressure Fuel System	D-18295 h	7-6-59
High Pressure Fuel System	D-18296 g	7-6-59
High Pressure Blanket System	D-18297 g	7-6-59
Low Pressure Blanket System	D-18298 h	7-6-59
Cooling Water System (Demineralized)	D-18240A h	7-6-59
Cooling Water System (Potable)	D-18240B j	7-6-59
Steam System	D-18267 e	7-6-59
Waste and Vent System — Part A	D-36722	-
Waste and Vent System — Part B	D-36723	-
Refrigeration and Cold Trap System	D-18333 g	7-6-59
Steam and Condensate Service System	D-22579 g	7-6-59
Leak Detector System	D-30696 a	7-6-59

Instrument drawing references are as follows:

HRT Instrument Application Tabulation	A-20954
HRT Multipurpose Instruments	D-18360
Instrument Air-Line Schematic 1, 2, 3, 4	D-21039 thru D-21042
Instrument Air-Line Schematic 5	D-20989
Instrument Air-Line Schematic 6	D-20981
Instrument Air-Line Schematic 7	D-20982
Instrument Air-Line Schematic 8	D-22625

NOTE: ALL PROCESS LINE INFORMATION IS FOR OPERATION AT AN
OVERALL GROSS POWER OF 5220 KW.

HRT FLOWSHEET IDENTIFICATION CODE

I. LINE NUMBER NOMENCLATURE

THE LINE SCHEDULE IS DIVIDED INTO FIVE SECTIONS AS FOLLOWS:

1. PROCESS PIPING

A) FUEL SYSTEM - LINES 100-199 INCLUSIVE

INCLUDES ALL LINES NORMALLY CARRYING FUEL SOLUTIONS;
OVERFLOW, VAPOR AND CONDENSATE, TRANSFER AND
SAMPLE LINES.

B) BLANKET SYSTEM - LINES 200-299 INCLUSIVE

INCLUDES ALL LINES NORMALLY CARRYING BLANKET
SOLUTION; OVERFLOW, VAPOR AND CONDENSATE, TRANSFER,
AND SAMPLE LINES.

2. STEAM PIPING

LINES 300-399 INCLUSIVE.

INCLUDES ALL LINES CARRYING STEAM OR CONDENSATE, AND
FEEDWATER SYSTEM.

3. SERVICE PIPING

LINES 400-574; 601-674; 701-949; INCLUSIVE.

INCLUDES ALL STEAM, WATER, VENT, COOLING WATER, AND
REFRIGERANT LINES.

4. PROCESS INSTRUMENT PIPING

LINES 575 - 599 INCLUSIVE
668 - 679 INCLUSIVE
691 - 699 INCLUSIVE
1000 - 1020 INCLUSIVE

SHOWN IN BOX
575

5. LEAK DETECTION SYSTEM

LINES 1 - 96 INCLUSIVE - FUEL SIDE
18 - 968 INCLUSIVE - BLANKET SIDE
950 - 974 INCLUSIVE - FUEL SIDE
975 - 999 INCLUSIVE - BLANKET SIDE

IA. INSTRUMENT NUMBERING CODE

1. INSTRUMENT PROCESS DIVISIONS

100-199 FUEL HIGH PRESSURE
200-299 BLANKET HIGH PRESSURE
300-399 FUEL LOW PRESSURE
400-499 BLANKET LOW PRESSURE
500-699 STEAM POWER
700-799 OFF GAS
800-899 UTILITIES
900-999 MISCELLANEOUS

2. 2nd AND 3rd DIGITS	FUNDAMENTAL VARIABLE	MULTIPURPOSE NUMBERS
00-04	ANALYSIS	0000-0400
05-14	ELECTRIC	0500-1400
15-34	FLOW	1500-3400
35-44	HAND	3500-4400
45-49	LEVEL	4500-4900
50-59	PRESSURE	5000-5900
60-64	RADIATION	6000-6400
65-94	TEMPERATURE	6500-9400
95-99	WEIGHT	9500-9900

II. LINE IDENTIFICATION

LINE NUMBERS (183)

SHIELD LINE

PRIMARY PROCESS LIQUID LINE

SECONDARY PROCESS LIQUID LINE

PRIMARY PROCESS GAS OR VAPOR LINE

SECONDARY PROCESS GAS OR VAPOR LINE

STEAM LINE

AIR LINE

ELECTRICAL LINE

GAS

NITROGEN

III. PIPE LINE CODE

TYPICAL CODE ON LINE

1-1/2" SCH. 80 CARBON STEEL PIPE 1-1/2 C80

1" SCH. 40 STAINLESS STEEL PIPE 1 S40 OR 1-40

1/2" SCH. 40 WROUGHT IRON PIPE 1/2 W40

1" SCH. 80 GALVANIZED PIPE 1 G80

IV. GENERAL LEGEND

CONDENSATE DRAIN CD

COOLING WATER CW

COOLING WATER DRAIN CWD

(X - BELOW AIR OPERATED VALVE) - FAILS CLOSED -

(O - BELOW AIR OPERATED VALVE) - FAILS OPEN -

EXAMPLE:

P C - 4 5 2

FUNDAMENTAL VARIABLE ALLOCATION NUMBERS

PROCESS DIVISION NUMBER

INSTRUMENT CLASSIFICATION LETTER(S)

FUNDAMENTAL VARIABLE CLASSIFICATION LETTER

V. VALVE AND FITTING SYMBOLS

SAFETY OR RELIEF VALVE OR

MANUALLY OPERATED VALVE

CHECK VALVE

AIR OPERATED VALVE (COMMERCIAL DIAPHRAGM)

AIR OPERATED VALVE (REMOTELY OPERATED IN RADIATION FIELD)

AIR OPERATED VALVE WITH POSITIONER

MANUALLY OPERATED EXTENSION HANDLE VALVE

GATE VALVE

GLOBE VALVE

VALVE NORMALLY CLOSED

VALVE NORMALLY OPEN

VALVE THROTTLING

SOLENOID VALVE

MECH. COUPLING

REDUCING COUPLING (SCREWED)

REDUCING COUPLING (WELDED)

FLOW RESTRICTOR

FLANGED JOINT

UNION (THREADED)

LOAD CELL

STRAINER

TRAP

FREEZER STATION

SUBSCRIPT LETTER

A - WELDED SS COIL - PERM. CONN.

B - SOLDERED Cu COIL - PERM. CONN.

C - SS OR Cu COIL - TEMP. CONN.

D - CLAMP-ON JACKET

RUPTURE DISC

CALORIMETER CONNECTION

VALVE (3-WAY) WITH NORMALLY BLOCKED PORT

VALVE (3-WAY) WITH COMMON PORT

PURGE LINE

PRESSURE REGULATOR VALVE

VI. INSTRUMENTATION AND MISC. SYMBOLS

EQUIPMENT NO.

(WHEN SHOWN ON AIR OPERATED VALVES)

FIGURE TO LEFT INDICATES LOWER AIR OPER. PRESSURE

FIGURE TO RIGHT INDICATES UPPER AIR OPER. PRESSURE

INSTRUMENTS WITH SINGLE FUNCTION:

LOCALLY MOUNTED.

TURBINE PANEL MOUNTED.

INTERMEDIATE MOUNTED.

CONTROL PANEL MOUNTED.

AUXILIARY MOUNTED.

TRANSMITTER

INSTRUMENTS WITH DUAL FUNCTIONS OR

INSTRUMENTS WITH CLOSE MECH. COUPLING

INSTRUMENT NOT COVERED IN CODE

LEADS TO ELECTRICAL CONTROL CIRCUIT ECC

LEADS TO ANNUNCIATOR ANN

LEADS TO VALVE POSITION INDICATOR VPI

INLINE INSTRUMENT

VII. INSTRUMENT CLASSIFICATION CODE

(MEANING OF LETTERS APPEARING IN INST. BALLOONS)

	FIRST LETTER	ANNUNCIATOR	PRIMARY ELEMENT	CONTROLLER	INDICATOR	AMPLIFIER, BOOSTER, RELAY - MODIFIER	REORDER	TRANSMITTER - TRANSDUCER	SWITCH	REORDER - CONTROLLER	INDICATOR - CONTROLLER	REMOTE OPERATED VALVE	SELF OR MANUAL OPERATED VALVE	SAFETY VALVE
2ND-3RD LETTER	A	E	C	I	M	R	T	X	RC	IC	CV	V	SV	
ANALYSIS	A	AA	AE	AC	AI	AM	AR	AT	AX	ARC	AIC	ACV		ASV
ELECTRIC	E	EA	EE	EC	EI	EM	ER	ET	EX	ERC	EIC	ECV	EV	ESV
FLOW	F	FA	FE	FC	FI	FM	FR	FT	FX	FRC	FIC	FCV	FV	FSV
HAND	H	HA		HC		HM		HT	HX		HIC	HCV	HV	
LEVEL	L	LA	LE	LC	LI	LM	LR	LT	LX	LRC	LIC	LCV	LV	LSV
PRESSURE	P	PA	PE	PC	PI	PM	PR	PT	PX	PRC	PIC	PCV	PV	PSV
RADIATION	R	RA	RE	RC	RI	RM	RR	RT	RX	RRC	RIC	RCV		
SPEED	S	SA	SE	SC	SI	SM	SR	ST	SX	SRC	SIC	SCV		
TEMPERATURE	T	TA	TE	TC	TI	TM	TR	TT	TX	TRC	TIC	TCV	TV	TSV
WEIGHT	W	WA	WE	WC	WI	WM	WR	WT	WX	WRC	WIC	WCV		
SPECIAL	X	XA	XE	XC	XI	XM	XR	XT	XX	XRC	XIC	XCV	XV	XSV

THE FOLLOWING SUBSCRIPTS MAY BE APPLIED TO THE FIRST LETTER.

a - AVERAGE i - CURRENT v - VOLTS
c - CONDUCTIVITY m - MOISTURE w - WATTS
d - DIFFERENTIAL pf - POWER FACTOR
f - FREQUENCY ph - CONCENTRATION
g - SPECIFIC GRAVITY t - TIME

PARTS LIST				
PART NO.	DWG. NO.	NO. REQD.	DESCRIPTION (NAME, SIZE, ETC.)	MATERIAL
903A			Valve	
903B			Valve	
903C			Valve	
903D			Valve	
903E			Valve	
903F			Valve	
903G			Valve	
903H			Valve	
903I			Valve	
903J			Valve	
903K			Valve	
903L			Valve	
903M			Valve	
903N			Valve	
903O			Valve	
903P			Valve	
903Q			Valve	
903R			Valve	
903S			Valve	
903T			Valve	
903U			Valve	
903V			Valve	
903W			Valve	
903X			Valve	
903Y			Valve	
903Z			Valve	
904A			Valve	
904B			Valve	
904C			Valve	
904D			Valve	
904E			Valve	
904F			Valve	
904G			Valve	
904H			Valve	
904I			Valve	
904J			Valve	
904K			Valve	
904L			Valve	
904M			Valve	
904N			Valve	
904O			Valve	
904P			Valve	
904Q			Valve	
904R			Valve	
904S			Valve	
904T			Valve	
904U			Valve	
904V			Valve	
904W			Valve	
904X			Valve	
904Y			Valve	
904Z			Valve	
905A			Valve	
905B			Valve	
905C			Valve	
905D			Valve	
905E			Valve	
905F			Valve	
905G			Valve	
905H			Valve	
905I			Valve	
905J			Valve	
905K			Valve	
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905M			Valve	
905N			Valve	
905O			Valve	
905P			Valve	
905Q			Valve	
905R			Valve	
905S			Valve	
905T			Valve	
905U			Valve	
905V			Valve	
905W			Valve	
905X			Valve	
905Y			Valve	
905Z			Valve	
906A			Valve	
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910R			Valve	
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910V			Valve	
910W			Valve	
910X			Valve	
910Y			Valve	
910Z			Valve	

- NOTES:
1. Condensate lines to be with steam @ 250 PSI & Evaporators with steam @ 75 PSI.
 2. The lines to the Evaporator Legs are to be 1/2" with built in strainer and 3/4" orifice 1/4" connections in line & 1/2" in the legs. The lines to be 1/2" in the legs and 3/4" in the orifice (1/2" connections) or equal.
 3. Valves in line with the steam are to be 1/2" in the legs and 3/4" in the orifice (1/2" connections) or equal.
 4. Pressure Regulators are to be Mason #11-1" sec. Reduced Pressure 5 to 150# inlet-250#.
 5. All steam and condensate lines are to be 1/2" in the legs and 3/4" in the orifice (1/2" connections) or equal.

	1. No. 338 - Was 2" 8. Line 338 - Was 3" 7. ADDED NEW STA 4 RELIEF VALVE FOR 501 6. ADDED REDUCING STATION 4 RELIEF VALVE FOR LINE 429 5. Changed Valves # 429A, 429B, 429C, 429D, 429E, 429F, 429G, 429H, 429I, 429J, 429K, 429L, 429M, 429N, 429O, 429P, 429Q, 429R, 429S, 429T, 429U, 429V, 429W, 429X, 429Y, 429Z, 430A, 430B, 430C, 430D, 430E, 430F, 430G, 430H, 430I, 430J, 430K, 430L, 430M, 430N, 430O, 430P, 430Q, 430R, 430S, 430T, 430U, 430V, 430W, 430X, 430Y, 430Z, 431A, 431B, 431C, 431D, 431E, 431F, 431G, 431H, 431I, 431J, 431K, 431L, 431M, 431N, 431O, 431P, 431Q, 431R, 431S, 431T, 431U, 431V, 431W, 431X, 431Y, 431Z, 432A, 432B, 432C, 432D, 432E, 432F, 432G, 432H, 432I, 432J, 432K, 432L, 432M, 432N, 432O, 432P, 432Q, 432R, 432S, 432T, 432U, 432V, 432W, 432X, 432Y, 432Z, 433A, 433B, 433C, 433D, 433E, 433F, 433G, 433H, 433I, 433J, 433K, 433L, 433M, 433N, 433O, 433P, 433Q, 433R, 433S, 433T, 433U, 433V, 433W, 433X, 433Y, 433Z, 434A, 434B, 434C, 434D, 434E, 434F, 434G, 434H, 434I, 434J, 434K, 434L, 434M, 434N, 434O, 434P, 434Q, 434R, 434S, 434T, 434U, 434V, 434W, 434X, 434Y, 434Z, 435A, 435B, 435C, 435D, 435E, 435F, 435G, 435H, 435I, 435J, 435K, 435L, 435M, 435N, 435O, 435P, 435Q, 435R, 435S, 435T, 435U, 435V, 435W, 435X, 435Y, 435Z, 436A, 436B, 436C, 436D, 436E, 436F, 436G, 436H, 436I, 436J, 436K, 436L, 436M, 436N, 436O, 436P, 436Q, 436R, 436S, 436T, 436U, 436V, 436W, 436X, 436Y, 436Z, 437A, 437B, 437C, 437D, 437E, 437F, 437G, 437H, 437I, 437J, 437K, 437L, 437M, 437N, 437O, 437P, 437Q, 437R, 437S, 437T, 437U, 437V, 437W, 437X, 437Y, 437Z, 438A, 438B, 438C, 438D, 438E, 438F, 438G, 438H, 438I, 438J, 438K, 438L, 438M, 438N, 438O, 438P, 438Q, 438R, 438S, 438T, 438U, 438V, 438W, 438X, 438Y, 438Z, 439A, 439B, 439C, 439D, 439E, 439F, 439G, 439H, 439I, 439J, 439K, 439L, 439M, 439N, 439O, 439P, 439Q, 439R, 439S, 439T, 439U, 439V, 439W, 439X, 439Y, 439Z, 440A, 440B, 440C, 440D, 440E, 440F, 440G, 440H, 440I, 440J, 440K, 440L, 440M, 440N, 440O, 440P, 440Q, 440R, 440S, 440T, 440U, 440V, 440W, 440X, 440Y, 440Z, 441A, 441B, 441C, 441D, 441E, 441F, 441G, 441H, 441I, 441J, 441K, 441L, 441M, 441N, 441O, 441P, 441Q, 441R, 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NO.	REVISIONS	DATE	APPR.	APPR.
1	Added Lines 578 & 656 Added Line 657	10-6-58		
2	Moved 219 to upstream of Cooler	5-15-57		
3	General	1-16-57		
4	General	3-7-56		
5	General	7-12-55		
6	General	5-2-55		

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5	General	7-12-55		
6	General	5-2-55		

REFERENCE DRAWINGS	DWG. NO.
HPT Cooling Water Flowchart	D-18360
HPT Multipurpose Instruments	D-18360
HPT Instr. Application Tabulation	A20954a
HPT Flowchart Identification Code	D-18330
HPT Flowchart Line Schedule	A-18329
High Press. Blanket System Flowchart	D-18297
High Press. Fuel System Flowchart	D-18296
Low Press. Fuel System Flowchart	D-18295
Steam System Flowchart	D-18267

REFERENCE DRAWINGS	DWG. NO.
HPT Cooling Water Flowchart	D-18360
HPT Multipurpose Instruments	D-18360
HPT Instr. Application Tabulation	A20954a
HPT Flowchart Identification Code	D-18330
HPT Flowchart Line Schedule	A-18329
High Press. Blanket System Flowchart	D-18297
High Press. Fuel System Flowchart	D-18296
Low Press. Fuel System Flowchart	D-18295
Steam System Flowchart	D-18267

PARTS LIST				
PART NO.	DWG. NO.	NO REQ	DESCRIPTION (NAME, SIZE, ETC.)	MATERIAL

NOTE:
WATER PIPING
Inside Reactor Shield To Be Galvanized.
Screwed Piping-ASTM A53-54T Grade B.
Except Heads.
Outside Reactor Shield To Be Screwed or
Welded Piping-ASTM A53-54T Grade B

PROCESS COOLING WATER MAINFOLD DETS-FUEL SIDE	D-22540
HRT Instrumentation Application Tabulation	A20954g
HRT Flowsheet Identification Code	D-18330
HRT Flowsheet Line Schedule	D-18329
REFERENCE DRAWINGS	DWG. NO.

BLDG. NO. 7500

COOLING WATER SYSTEM FLOW SHEET (DEMINERALIZED WATER)

OAK RIDGE NATIONAL LABORATORY OPERATED BY UNION CARBIDE NUCLEAR COMPANY A DIVISION OF UNION CARBIDE AND CARBON CORPORATION OAK RIDGE, TENNESSEE	
SUBMITTED S.E. BEALL	APPROVED R.B. RIGGS
D-18240-A	

N	1	5. No. Added To Line 280	ASL	C.A.R.
2	9	1. Valve 280C Was 304C	10-31-59	10-10-59
3	9	2. Valve 280A Added		
4	9	1- Line 423 changed		
5	9	ADDD LINE SIZES TO 406, 533 WAS 1"		
6	9	TIED LINE 443 TO 469 INSTEAD OF 458		
7	9	CHANGED 1903 TO 1904 PERMANENT FUEL T		
8	9	PARAMETERS, ADDED 10000000000000000000		
9	9	ADDED VALVE 451 TO THE LINE, SAVED FILL TR.	sterling	
10	9	ADDED VALVE 451 TO LINE 425	6-5-58	
11	9	ADDED COOLING WATER TO 100MB 425		
12	9	Redrawn For Changes see CF-57-10-1	7-8-57	
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PARTS LIST				
PART NO.	DWG. NO.	NO REQD	DESCRIPTION (NAME, SIZE, ETC.)	MATERIAL

NO.	REVISIONS	DATE	APPD	APPD
1	As Issued	7-1-57	W. J. B. R.	
2	Revised Flowsheet per marked-up Print: Lines 862, 844, 891, 4321. PCV-842, Steam Sys. Sample Sta., R/Wing over high bay area to Chem. Tech. & Lock. Room	7-25-58	CBC	5-4-57
3	Redrawn - For Changes see CR-57-10-1	7-25-58	W. J. B. R.	

10. Added Condensate Drain Line Cooler In Line 852
 9. Changed Line Reference 782 To 783.
 8. Changed Valve 795A To 765A.
 7. Relocated PI-672 PI-673, PI-656 Removed Line 493 & Water. Sample Station At Left Side Of Dwg. Added PI-560 ACB With Assoc. Piping Added PI-856E
 6. Perouted Line 393 For Clarification.
 5. Perouted Lines 840, 384, 394, 396 For Clarification. Removed Reducer From Line 389.
 4. Changed Line 492 From 1 1/2" To 2". Showed Break In Line To Cell "C" Vacuum Pumps.
 3. Added Lines 1830 & 1831 To & From Waste Evap. Valves 493C & 1830A In Line.
 Added Cooling Water Line (1032) To Trap In Line 662

NOTE:
 Water Piping
 Inside Reactor Shield To Be Galvanized.
 Screwed Piping - ASTM A53-54T Grade B. (Except Heads.
 Outside Reactor Shield To Be screwed or Welded Piping - ASTM A53-54T Grade B.

Cooling Water Flowsheet - Demineralized Water	D-18240A
HRT Instrumentation Application Tabulation	A-20954a
HRT Flowsheet Identification Code	D-18330
HRT Flowsheet Line Schedule	D-18329
REFERENCE DRAWINGS	DWG. NO.

THIS DRAWING
 CLASSIFIED
 AS UNCLASSIFIED
 PER E.C. ZAPP
 LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
 FRACTIONS: ±
 DECIMALS: ±
 ANGLES: ±
 SCALE:
 REVISED
 AUG 20 1958
 MAR 31 1959
 NOV 13 1958

BLDG. NO.

COOLING WATER FLOWSHEET
 (POTABLE WATER)

OAK RIDGE NATIONAL LABORATORY
 OPERATED BY
 UNION CARBIDE NUCLEAR COMPANY
 A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

OAK RIDGE, TENNESSEE

SUBMITTED: S.E. DEALL
 ACCEPTED: R.B. BRIGGS
 APPROVED: D-18240B

MATERIALS LIST		
NAME	SIZE	MATERIAL

H.R.T. Instrumentation Application Tabulation	A20954a
H.R.T. Flowsheet Identification Code	D-18330
H.R.T. Flowsheet Line Schedule	A-18329
Low Press. Blanket System Flowsheet	D-18298
High Press. Blanket System Flowsheet	D-18297
High Press. Fuel System Flowsheet	D-18296
Low Press. Fuel System Flowsheet	D-18295

REFERENCE DRAWINGS	DWG. NO.
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REVISED
AUG 20 195
NOV 13 195

THIS DRAWING
CLASSIFIED
UNCLASSIFIED

PER: F.C. ZAPP

SCALE:

H.R.T. BLDG. 7500

STEAM SYSTEM PROCESS FLOWSHEET

OAK RIDGE NATIONAL LABORATORY
OPERATED BY
CARBIDE AND CARBON CHEMICALS COMPANY

A DIVISION OF UNION CARBIDE AND CARBON CORPORATION
OAK RIDGE, TENNESSEE

SUBMITTED	ACCEPTED	APPROVED
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QUANTITIES	MODEL No.	REV
	4-2-55 <i>St. Paul</i>	<i>DR. King</i> 5-2-55
		REV
		D-18267 9

PARTS LIST			DESCRIPTION (NAME, SIZE, ETC.)	MATERIAL
PART NO.	DWG. NO.	NO. REQD.		

FOR CONTINUATION OF WASTE & VENT SYSTEM FLOWSHEET SEE PART B DWG. D-36723 THESE DWGS. SUPERCEDE DWG. NO. D-18309

- NOTES:
- Carbon Steel Pipe in This System Is To Be Butt Welded Steel ASTM-A53.
 - Steam Piping Shall Be In Accordance With HRT Specification JS-1202-1.
 - All Carbon Steel Piping & Fittings Within The Reactor & Chemical Process Cells Are To Be Given A Protective Coating Of Paint.
 - All Stainless Steel Piping In This System Is To Be In Accordance With ASTM-A312C Seamless Type 347.

Waste & Vent System Flowsheet (Part-B)	D-36723
Gen. Piping Arr. Waste Evap. System	E-24810
HRT Inst. Application Tabulation	A-20954
HRT Flowsheet Identification Code	D-18330
HRT Flowsheet Line Schedule	D-18329

REFERENCE DRAWINGS		DWG. NO.
HRT		BLDG. NO. 7500

WASTE & VENT SYSTEM FLOWSHEET (PART A)

OAK RIDGE NATIONAL LABORATORY
OPERATED BY
UNION CARBIDE NUCLEAR COMPANY
DIVISION OF UNION CARBIDE CORPORATION
OAK RIDGE, TENNESSEE

SUBMITTED	ACCEPTED	APPROVED	REV

- GENERAL SPECIFICATIONS:
- Break all sharp edges 1/64 max. unless otherwise specified.
 - The fabricator may choose the type, grade or finish of material unless otherwise specified.
- MACHINE FINISH SPECIFICATIONS:
- Finish symbols are in accordance with ASA Standard B46.1-1958.
 - Roughness height values are the maximum arithmetical average deviation from the mean surface, expressed in microinches.
 - For surfaces not otherwise indicated, roughness height shall not exceed.

CLASSIFICATION	
Not Classified	C.A. Burchsted
LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED	
FRACTIONS: ±	
DECIMALS: ±	
ANGLES: ±	
SCALE: None	

APPROVED FOR CONSTRUCTION
NOV 13 1958

LTR	REVISIONS	DATE	APPD	APPD
DRAWN	DATE	CHECKED	DATE	APPROVED
DESIGNED	DATE	SUBMITTED	DATE	APPROVED
Krick	7-2-59	9-23-57	FC-2APP	9-23-57
			APPROVED	DATE
			11/15/59	

W 10/20/57

LTR	REVISIONS	DATE	APPD	APPD
7-29-59	1-15	7-29-59	ROBERTSON	10-5-59
DESIGNED	DATE	SUBMITTED	DATE	APPROVED
				11/1/59

- NOTES:
- Carbon Steel Pipe In This System Is To Be Butt Welded ASTM-A53.
 - Steam Piping Shall Be In Accordance With HRT Specification JS-1202-1.
 - All Carbon Steel Piping & Fittings Within The Reactor & Chemical Process Cells Are To Be Given A Protective Coating OP Paint.
 - All Stainless Steel Piping In This System Is To Be In Accordance With ASTM-A312 (Seamless Type 347).

GENERAL SPECIFICATIONS:

- Break all sharp edges 1/64 max., unless otherwise specified.
- The fabricator may choose the type, grade or finish of material unless otherwise specified.

MACHINE FINISH SPECIFICATIONS:

- Finish symbols are in accordance with ASA Standard B46.1-1958.
- Roughness height values are the maximum arithmetical average deviation from the mean surface, expressed in microinches.
- For surfaces not otherwise indicated, roughness height shall not exceed $\sqrt{V}$.

CLASSIFICATION

Not Classified

C.A. Burchsted

LIMITS ON DIMENSIONS UNLESS OTHERWISE SPECIFIED

FRACTIONS: $\pm$

DECIMALS: $\pm$

ANGLES: $\pm$

SCALE: None

Waste & Vent System Flowsheet (Part A)	D-36722
Gen. Piping Arr. Waste Evap. System	E-24610
HRT Inst. Application Tabulat	A-20954a
HRT Flowsheet Identification Code	D-18330
HRT Flowsheet Line Schedule	D-18329
REFERENCE DRAWINGS	DWG. NO.
HRT	BUILD. NO. 7500
WASTE & VENT SYSTEM FLOWSHEET (PART B)	
OAK RIDGE NATIONAL LABORATORY OPERATED BY UNION CARBIDE NUCLEAR COMPANY DIVISION OF UNION CARBIDE CORPORATION OAK RIDGE, TENNESSEE	
SUBMITTED	APPROVED
11/1/59	11/1/59
	REV
	D-36723

APPROVED FOR CONSTRUCTION

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PARTS LIST				
PART NO.	DWG. NO.	NO. REQD	DESCRIPTION (NAME, SIZE, ETC.)	MATERIAL

RECORDED
MAY 14 1958
AUG 20 1958
NOV 13 1958

PARTS LIST				
PART NO.	DWG. NO.	NO REQD	DESCRIPTION (NAME, SIZE, ETC.)	MATERIAL

Diagram illustrating the Steam Leak Detector System Pressurizer (300 PSI) and associated headers.

Headers and Valves:

- FUEL H.P. HEADER:** HV P-7, HV P-8, HV P-9, HV P-10, HV P-11, HV P-12, HV P-13, HV P-14, HV P-15, HV P-16, HV P-17, HV P-18, HV P-19, HV P-20, HV P-21, HV P-22, HV P-23, HV P-24, HV P-25, HV P-26, HV P-27, HV P-28, HV P-29, HV P-30, HV P-31, HV P-32, HV P-33, HV P-34, HV P-35, HV P-36, HV P-37, HV P-38, HV P-39, HV P-40, HV P-41, HV P-42, HV P-43, HV P-44, HV P-45, HV P-46, HV P-47, HV P-48, HV P-49, HV P-50, HV P-51, HV P-52, HV P-53, HV P-54, HV P-55, HV P-56, HV P-57, HV P-58, HV P-59, HV P-60, HV P-61, HV P-62, HV P-63, HV P-64, HV P-65, HV P-66, HV P-67, HV P-68, HV P-69, HV P-70, HV P-71, HV P-72, HV P-73, HV P-74, HV P-75, HV P-76, HV P-77, HV P-78, HV P-79, HV P-80, HV P-81, HV P-82, HV P-83, HV P-84, HV P-85, HV P-86, HV P-87, HV P-88, HV P-89, HV P-90, HV P-91, HV P-92, HV P-93, HV P-94, HV P-95, HV P-96, HV P-97, HV P-98, HV P-99, HV P-100, HV P-101, HV P-102, HV P-103, HV P-104, HV P-105, HV P-106, HV P-107, HV P-108, HV P-109, HV P-110, HV P-111, HV P-112, HV P-113, HV P-114, HV P-115, HV P-116, HV P-117, HV P-118, HV P-119, HV P-120, HV P-121, HV P-122, HV P-123, HV P-124, HV P-125, HV P-126, HV P-127, HV P-128, HV P-129, HV P-130, HV P-131, HV P-132, HV P-133, HV P-134, HV P-135, HV P-136, HV P-137, HV P-138, HV P-139, HV P-140, HV P-141, HV P-142, HV P-143, HV P-144, HV P-145, HV P-146, HV P-147, HV P-148, HV P-149, HV P-150, HV P-151, HV P-152, HV P-153, HV P-154, HV P-155, HV P-156, HV P-157, HV P-158, HV P-159, HV P-160, HV P-161, HV P-162, HV P-163, HV P-164, HV P-165, HV P-166, HV P-167, HV P-168, HV P-169, HV P-170, HV P-171, HV P-172, HV P-173, HV P-174, HV P-175, HV P-176, HV P-177, HV P-178, HV P-179, HV P-180, HV P-181, HV P-182, HV P-183, HV P-184, HV P-185, HV P-186, HV P-187, HV P-188, HV P-189, HV P-190, HV P-191, HV P-192, HV P-193, HV P-194, HV P-195, HV P-196, HV P-197, HV P-198, HV P-199, HV P-200, HV P-201, HV P-202, HV P-203, HV P-204, HV P-205, HV P-206, HV P-207, HV P-208, HV P-209, HV P-210, HV P-211, HV P-212, HV P-213, HV P-214, HV 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