Industrial Fuel Gas Demonstration Plant Program

Prepared For
The Department of Energy
Under Contract ET-77-C-01-2582

MEMPHIS LIGHT, GAS AND WATER DIVISION
P.O. BOX 430, MEMPHIS, TENNESSEE 38101

In Association with
FOSTER WHEELER ENERGY CORPORATION
INSTITUTE OF GAS TECHNOLOGY
DELTA REFINING COMPANY

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Industrial Fuel Gas Demonstration Plant Program

DOE/ET/13046--T5

CURRENT WORKING ESTIMATE

PHASE II AND III

MASTER

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MEMPHIS INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROJECT

CURRENT WORKING ESTIMATES
FOR PHASE II AND III
(Deliverable #23)

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MEMPHIS LIGHT, GAS & WATER DIVISION
P.O. Box 430
MEMPHIS, TENNESSEE 38101

PREPARED FOR THE
U. S. DEPARTMENT OF ENERGY
ASSISTANT SECRETARY OF FOSSIL ENERGY

UNDER CONTRACT DE-AC02-77ET13406
(FORMERLY CONTRACT ET-77-C-01-2582)

MEMPHIS LIGHT, GAS AND WATER DIVISION

December 17, 1979
Letter No. ME-105F

U. S. Department of Energy
Projects Management Division, Dr. R. W. Laza
9800 South Cass Avenue
Argonne, Illinois 60439

Attention: Dr. Peter Lui

Subject: MLGW Reference No. 8802
DOE Reference No. 2582
CURRENT WORKING ESTIMATES FOR
PHASES II AND III
DELIVERABLE NO. 23

Gentlemen:

Enclosed is Deliverable No. 23, "Current Working Estimates for Phases II and III", which has been prepared as part of our Phase I work.

We request your approval.

Very truly yours,

R. W. Gray
Program Manager

RWG:RJS:au
Enclosures.

cc: J. Gannon (6)

**MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM**

FOSTER WHEELER

— PATENT NOTICE —

This technical report is being transmitted in advance of DOE patent clearance and no further dissemination or publication shall be made of the report without prior approval of the DOE Patent Counsel.

— TECHNICAL STATUS —

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**MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM**

CURRENT WORKING ESTIMATE

PHASES II AND III

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MLGW/DOE INDUSTRIAL FUEL GAS DEMONSTRATION PLANT PROGRAM

FOSTER WHEELER
CURRENT WORKING ESTIMATES

Section 1.0 INTRODUCTION

1.1 Program Summary

The United States Department of Energy (DOE) executed a contract with Memphis Light, Gas and Water Division (MLGW) which requires MLGW to perform process analysis, design, procurement, construction, testing, operation, and evaluation of a plant which will demonstrate the feasibility of converting high sulfur bituminous coal to industrial fuel gas with a heating value of 300 ± 30 Btu per standard cubic foot (SCF). The demonstration plant is based on the U-Gas process, and its product gas is to be used in commercial applications in Memphis, Tenn.

In order to perform this work, MLGW has established an industrial team, which includes:

MLGW - Memphis Light, Gas and Water Division, Memphis, Tenn.
The prime contractor and distributor of the industrial fuel gas.

FWEC - Foster Wheeler Energy Corporation, Livingston, N.J.
The engineer- construction manager.

IGT - Institute of Gas Technology, Chicago, Illinois.
The process developer.

DRC - Delta Refining Company, Memphis, Tenn.
To provide operating experience.

The contract specifies that the work is to be conducted in three phases. The Phases are:

Phase I - Program Development and Conceptual Design
Phase II - Demonstration Plant Final Design, Procurement and Construction
Phase III - Demonstration Plant Operation

Under Task III of Phase I a Cost Estimate for the Demonstration Plant was completed as well as estimates for other Phase II and III work. The output of this Estimate is presented in this volume.

This Current Working Estimate for Phases II and III is based on the Process and Mechanical Designs presented in the Task II report (2nd issue) and the 12 volumes of the Task III report. In addition, the capital cost estimate summarized in the appendix has been used in the Economic Analysis (Task III) Report.

MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM

FOSTER WHEELER
CURRENT WORKING ESTIMATES

Table 1

AREA DESIGNATIONS
FOR DEMONSTRATION PLANT

<u>Area No.</u>	<u>Title</u>	<u>Section No.</u>
2230	Process Units	-
2231	Air Separation	310
2232	Coal/Coke Treating & Feed	320
2233	Coal Gasification	330
2234	Gas Cooling & Scrubbing	340
2235	Gas Compression (Raw/Recycle Gas)	350
2236	Gas Treating	360
2237	Sour Water Stripping	370
2238	Sulfur Recovery	380
2239	Tail Gas Treating	390
2222	Credit Generation	220
2240	Support Facilities	-
2241	Coal/Coke Handling	410
2242	Ash Treatment	420
2243	Utility Area	430
	Steam Generation	
	Raw Water Storage	
	BFW Treatment	
	Plant Air	
2244	Waste Water Treatment	440
2245	Cooling Tower	450
2246	Flare	460
2247	General Facilities	470
	Long Term Coal Storage	
	Long Term Ash & Solid Waste Storage	
	Interconnecting Piping	
	Roads & Fences	
	Firewater System	
	Power & Lighting, & Communication	
	Sewers	
2248	Buildings	480
2249	Dock Facilities	490

Note: Section numbers shown on Drawings are the last two digits of the area number, followed by a zero (e.g. Section 310 is Air Separation Unit). Area numbers have been established for Cost Control Purposes in Phase II.

SUMMARY OF PHASE II COST BY PLANT UNIT
(DOLLARS)

CODE	DESCRIPTION	ZONE I	ZONE II	ZONE III	ZONE IV	ZONE V	ZONE VI	ZONE VII	ZONE VIII	ZONE IX	ZONE X	ZONE XI	ZONE XII	ZONE XIII	ZONE XIV	TOTAL PLANT CAPITAL INVESTMENT	PHASE II COSTS OTHER THAN PLANT INVESTMENT	GRAND TOTAL PHASE II COSTS
1000	DIRECT MATERIAL	5,147,000	27,739,000	21,588,000	1,462,000	2,205,000	9,155,500	10,592,000	2,006,000	8,497,400	4,287,000	1,249,000	279,000	1,815,000	8,129,000	103,850,900		
2000	SUBCONTRACT MAT'L AND LABOR	10,418,500	5,693,500	8,707,800	332,600	5,829,000	18,485,000	1,805,000	112,000	19,367,000	3,770,000	1,355,050	67,100	5,438,000	23,502,000	108,482,550		
3000	S/C LABOR	1,583,350	7,480,250	2,557,110	399,060	742,870	1,200,790	1,754,260	245,230	2,123,000	1,800,930	218,110	136,750	45,370	3,168,590	23,465,670		
5000	INDIRECT MAT'L AND TOOLS	735,335	1,754,750	1,408,718	81,199	376,348	1,236,702	606,800	101,334	1,285,846	396,976	129,589	20,704	484,469	1,492,230	10,111,000		
6000	INDIRECT LABOR AND SUPERVISION	771,811	1,841,182	1,478,520	85,223	394,996	1,297,980	636,867	106,355	1,349,560	416,646	136,010	21,730	508,475	1,566,645	10,612,000		
7000	PAYROLL BURDEN	759,707	3,358,322	1,118,112	155,987	258,249	457,133	667,635	116,022	840,577	704,516	91,208	66,583	27,408	1,251,541	9,893,000		
8000	ENGINEERING (FW)	3,323,367	4,229,740	2,537,844	634,461	966,798	1,480,409	2,960,813	302,124	1,903,383	1,903,383	422,974	422,974	302,124	3,625,491	25,045,890		
9000	INSURANCE															390,000		
-	CONSTRUCTION MANAGEMENT	723,881	1,727,416	1,386,782	79,934	370,486	1,217,411	597,348	99,756	1,265,826	390,792	127,570	20,381	476,922	1,468,995	9,953,500		
-	FEE (ENG.)	525,058	666,254	400,953	100,238	152,744	233,889	467,779	47,733	300,715	300,715	66,825	66,825	47,733	572,790	3,852,251		
-	FEE (CONST. MGT.)	127,635	304,578	244,517	14,094	65,324	214,657	105,324	17,589	223,190	68,904	22,493	3,594	84,091	259,010	1,755,000		
-	ROYALTIES			318,000		24,000		227,000								569,000		
-	LAND															62,000		
-	PIPELINE															10,364,700		
-	WORKING CAPITAL															9,215,000		
-	MLGW COSTS																5,086,693	
-	IGT COSTS																10,060,015	
-	DRC COSTS																8,177,332	
-	FWEC COSTS																3,735,011	
	TOTAL CURRENT (1979) COSTS	\$24,115,644	\$54,806,992	\$41,746,356	\$3,044,796	\$11,385,815	\$34,979,471	\$20,440,891	\$3,154,143	\$37,666,497	\$13,439,862	\$4,018,829	\$1,105,641	\$13,229,592	\$45,036,292	\$327,692,461	\$27,159,051	\$354,851,512
	ESCALATION TO 1979 YEAR DOLLARS																	
-	MATERIALS	2,576,069	6,891,549	5,596,031	301,730	1,292,840	4,575,743	2,580,365	456,840	4,533,183	1,382,418	490,264	80,678	1,707,158	5,045,127	37,880,000		
-	CONSTRUCTION	2,080,701	4,468,981	2,642,056	228,034	1,061,071	2,979,254	1,175,480	164,806	3,447,116	1,212,934	310,627	73,063	1,230,907	4,367,943	25,442,973		
-	ENGINEERING	556,949	708,844	425,306	106,327	162,022	248,095	496,190	50,632	318,980	318,980	70,844	70,844	50,632	607,580	4,192,305		
-	CONSTRUCTION MANAGEMENT	180,979	431,876	346,710	19,985	92,626	304,375	149,344	24,940	316,472	97,700	31,894	5,096	119,236	367,267	2,488,500		
-	PIPELINE															3,213,057		
-	MLGW ESCALATION															1,348,464		
-	IGT ESCALATION															1,568,629		
-	DRC ESCALATION															2,171,530		
-	FWEC ESCALATION															507,662		
	TOTALS	\$29,510,342	\$67,302,242	\$50,756,459	\$3,700,872	\$13,994,374	\$49,086,938	\$24,842,210	\$3,851,361	\$45,772,248	\$16,451,894	\$4,922,458	\$1,335,322	\$16,937,525	\$55,424,209	\$400,909,296	\$32,755,336	\$433,664,632

NOTES:
1) CODES 1000, 2000 AND 3000 WERE ESTIMATED BY ZONE AND AREA. OTHER ESTIMATES WERE MADE ON THE TOTALS FOR CODES 1000, 2000 AND 3000, AND ARE ALLOCATED, FOR THE PURPOSE OF THIS CHART, ON THE FOLLOWING BASES:

A) CODES 5000 AND 6000
TOTAL CODES 5000 AND 6000 COSTS WERE ALLOCATED DIRECTLY AS THE RATIO OF CODES 1/2000 OF EACH UNIT TO THE PLANT TOTAL FOR CODES 1/2000.

B) CODES 7000
THE TOTAL FOR CODE 7000 WAS ALLOCATED AS THE DIRECT LABOR HOURS IN EACH ZONE/AREA.

C) CONSTRUCTION MANAGEMENT
THE TOTAL ESTIMATE FOR CONSTRUCTION MANAGEMENT WAS ALLOCATED TO EACH ZONE IN THE SAME RATIO AS TOTAL LABOR HOURS IN EACH ZONE TO THE TOTAL HOURS FOR THE PLANT.

D) ENGINEERING
ENGINEERING COSTS ARE ALLOCATED ON THE BASIS OF AN INDEPENDENT ESTIMATE.

E) FEES
FEES RELATING TO PLANT DESIGN AND CONSTRUCTION ONLY ARE SHOWN SEPARATELY. THEY ARE ALLOCATED BASED UPON THE ENGINEERING AND CONSTRUCTION MANAGEMENT COSTS IN EACH ZONE.

2) ESCALATION HAS BEEN BASED ON AN ANNUAL RATE OF 7%, COMPOUNDED TO THE MONTH IN WHICH 50% OF THE TOTAL COSTS ARE EXPECTED TO BE EXPENDED. THESE ARE:

A) CONSTRUCTION - 42 MONTHS AFTER OCTOBER 1979 BASE COST PERIOD.

B) MATERIALS - 35 MONTHS AFTER OCTOBER 1979 BASE COST PERIOD.

C) ENGINEERING - 27 MONTHS AFTER OCTOBER 1979 BASE COST PERIOD.

D) CONSTRUCTION MANAGEMENT - 35 MONTHS AFTER OCTOBER 1979 BASE COST PERIOD.

3) FOR PURPOSES OF ESCALATION CALCULATION ONLY, 50% OF CODE 2000 COSTS ARE ASSUMED MATERIALS, 37% LABOR.

4) SUMMARY OF ZONES

ZONE I

2249 BRICK FACILITIES
2241 COAL/COKE HANDLING
2232 COAL/COKE TREATING & FEED PARTIAL
(EXCLUDES COAL HOPPERS IN GASIFIER COMPLEX)

ZONE II

2232 COAL/COKE TREATING & FEED PARTIAL
(COAL HOPPERS)
2233 COAL GASIFICATION
2242 ASH TREATMENT PARTIAL
(EXCLUDES CLARIFIERS)
2234 GAS COOLING & SCRUBBING

ZONE III

2235 GAS COMPRESSION (RAW/RECYCLE GAS)
2238 GAS TREATING

ZONE IV

2237 SODIUM STRIPPING

ZONE V

2238 SULFUR RECOVERY
2239 TAIL GAS TREATING

ZONE VI

2231 AIR SEPARATION AND PLANT AIR PARTIAL
(EXCLUDES N2 STORAGE)

ZONE VII

2222 CREDIT GENERATION

ZONE VIII

2242 ASH TREATMENT PARTIAL
(CLARIFIERS)

ZONE IX

2243 UTILITIES

ZONE X

2244 WASTE WATER TREATMENT

ZONE XI

2245 COOLING TOWER

ZONE XII

2246 FLARE

ZONE XIII

2248 BUILDINGS

ZONE XIV

2247 GENERAL OFFICES

5) ESCALATION BASED AS FOLLOWS:

A) IGT - 7% PER YEAR, FIGURE SHOWN IS AN ESTIMATE FOR PRESENTATION ONLY

B) DRC - 10% PER YEAR

C) MLGW - 7% PER YEAR

D) FWEC - 7%

E) EIA (INCLUDED IN FWEC) @ 7% - \$287,167

6) ESCALATION, AT 7%, IS AS FOLLOWS:

A) IGT - \$1,480,231

B) DRC - \$1,443,147

TOTAL WITH 7% ESCALATION IS: \$433,664,632

INDUSTRIAL FUEL GAS DEMONSTRATION PLANT
MEMPHIS, TENN.
CONTRACT NO. ET 77C-01-2582
MEMPHIS LIGHT, GAS
AND WATER DIVISION
MEMPHIS, TENN.

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DWG. NO. 11-17-77

SUMMARY OF PHASE II COST BY PLANT UNIT

DWG. NO.

CONTRACT PRICING PROPOSAL
(RESEARCH AND DEVELOPMENT)

Office of Management and Budget
Approval No. 29-RO184

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PAGE NO.

NO. OF PAGES

NAME OF OFFEROR
Memphis Light, Gas & Water Division

HOME OFFICE ADDRESS
P. O. Box 430
Memphis, TN 38145

SUPPLIES AND/OR SERVICES TO BE FURNISHED

INDUSTRIAL FUEL GAS DEMONSTRATION
PLANT - PHASE II - BRIDGING PERIOD
MARCH, 1980 - NOVEMBER, 1980

DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED

TOTAL AMOUNT OF PROPOSAL

GOVT SOLICITATION NO.

\$ 947,224

DETAIL DESCRIPTION OF COST ELEMENTS

1. DIRECT MATERIAL (Itemize on Exhibit A)	EST COST (\$)	TOTAL EST COST ¹	REFERENCE ²
a. PURCHASED PARTS			
b. SUBCONTRACTED ITEMS			
c. OTHER—(1) RAW MATERIAL			
(2) YOUR STANDARD COMMERCIAL ITEMS			
(3) INTERDIVISIONAL TRANSFERS (At other than cost)			
TOTAL DIRECT MATERIAL			
2. MATERIAL OVERHEAD ³ (Rate % X \$ base = \$)			
3. DIRECT LABOR (Specify)	ESTIMATED HOURS	RATE/HOUR	EST COST (\$)
See Attached			330,350
TOTAL DIRECT LABOR			330,350
4. LABOR OVERHEAD (Specify Department or Cost Center) ⁴	O.H. RATE	X BASE =	EST COST (\$)
	52%	330,530	171,785
TOTAL LABOR OVERHEAD			171,785
5. SPECIAL TESTING (Including field work at Government installations)		EST COST (\$)	
TOTAL SPECIAL TESTING			
6. SPECIAL EQUIPMENT (If direct charges) (Itemize on Exhibit A)			
7. TRAVEL (If direct charges) (Give details on attached schedule)		EST COST (\$)	
a. TRANSPORTATION		21,217	
b. PER DIEM OR SUBSISTENCE			
TOTAL TRAVEL		21,217	
8. CONSULTANTS (Identify—purpose—rate)		EST COST (\$)	
Engineering Services		63,000	
MIS Consultants		264,810	
Independent External Auditors		24,300	
TOTAL CONSULTANTS		352,110	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)			
TOTAL DIRECT COST AND OVERHEAD		875,462	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 2.8 % of cost element Nos. 10)		24,513	
12. ROYALTIES—Escalation @ 7% per year		47,249	
TOTAL ESTIMATED COST		947,224	
14. FEE OR PROFIT			
TOTAL ESTIMATED COST AND FEE OR PROFIT		947,224	

MLGW INDUSTRIAL FUEL GAS DEMONSTRATION PLANT
ESTIMATE OF COST - PHASE II CONSTRUCTION
MARCH 1980 - FEBRUARY 1984

MARCH 1980 - NOVEMBER 1980

<u>PERSONNEL</u>	<u>MONTHLY SALARY</u>	<u>NO. OF MONTHS</u>	<u>TOTAL SALARY</u>	<u>52% OVERHEAD</u>	<u>ESTIMATED COST</u>
Program Manager	\$2,500	9	\$ 22,500	\$ 11,700	\$ 34,200
Engineering Manager	2,350	9	21,150	11,000	32,150
Contract Administrator	2,150	9	19,350	10,060	29,410
Project Engineers:					
a. Instrumentation	2,250	9	20,250	10,530	30,780
b. Mechanical	2,250	9	20,250	10,530	30,780
c. Electrical	2,250	9	20,250	10,530	30,780
d. Civil	2,250	8	18,000	9,360	27,360
Design Engineers (2)	2,000	8	32,000	16,640	48,640
Process Engineers (2)	2,150	7	30,100	15,650	45,750
Engineers (2)	1,850	7	25,900	13,470	39,370
Procurement Coordinators (2)	1,850	7	25,900	13,470	39,370
Accountants:					
a. Senior	2,000	9	18,000	9,360	27,360
b. Junior	1,800	9	16,200	8,425	24,625
Draftsman (2)	1,350	7	18,900	9,830	28,730
Clerical (2)	1,200	9	<u>21,600</u>	<u>11,230</u>	<u>32,830</u>
TOTAL PAYROLL			\$330,350	\$171,785	\$502,135

TRAVEL

DESTINATION	NO. OF MAN TRIPS	AIR FARE	LIVING EXPENSE	CAR RENTAL	ESTIMATED COST
Livingston, NJ (3 days)	27	\$288	\$180	\$75	\$14,661
Chicago, IL (2 days)	10	172	120	50	3,420
Pittsburgh, PA (2 days)	8	222	120	50	<u>3,136</u>
					\$21,217

SUBCONTRACTS

DESCRIPTION	CONSULTANT/ CONTRACTOR	BASIS OF ESTIMATE	ESTIMATED COST
Engineering Services at FWEC Corporation	D. Aubrecht	EE	\$ 63,000
Design and Implement CWBS System	Unknown	EE	264,810
Independent External Auditors	Delotte, Haskins, & Sells	EE (300 Hrs.)	<u>24,300</u>
			\$352,110
		ESTIMATED COSTS	875,462
		G & A @ 2.8%	<u>24,513</u>
			\$899,975
		ESCALATION @ 7% PER YEAR	<u>47,249</u>
		TOTAL ESTIMATED COST	\$947,224

EE - Engineering Estimate

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-16.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Memphis Light, Gas & Water Division		SUPPLIES AND/OR SERVICES TO BE FURNISHED INDUSTRIAL FUEL GAS DEMONSTRATION PLANT - PHASE II - CONSTRUCTION DECEMBER, 1980 - FEBRUARY, 1984			
HOME OFFICE ADDRESS P. O. Box 430 Memphis, TN 38145		TOTAL AMOUNT OF PROPOSAL \$ 5,487,933		GOVT SOLICITATION NO.	
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED					
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST	REFER- ENCE
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS			1,188,526		
c. OTHER - (1) RAW MATERIAL					
(2) FOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)				1,188,526	
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD (Rate % N'S base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	
See Attached				1,606,800	
TOTAL DIRECT LABOR				1,606,800	
4. LABOR OVERHEAD (Specify Department or Cost Center)		O.H. RATE	X BASE =	EST COST (\$)	
		52%	1,606,800	835,530	
TOTAL LABOR OVERHEAD				835,530	
5. SPECIAL TESTING (Including field work at Government installations)				EST COST (\$)	
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charges) (Itemize on Exhibit A)					
7. TRAVEL (If direct charges) (Give details on attached schedule)				EST COST (\$)	
a. TRANSPORTATION				93,127	
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL				93,127	
8. CONSULTANTS (Identify - purpose - rate)				EST COST (\$)	
Engineering Services				273,000	
Independent External Auditors				75,700	
TOTAL CONSULTANTS				348,700	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
TOTAL DIRECT COST AND OVERHEAD				4,072,683	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 2.8 % of cost element No. 10)				114,035	
12. ROYALTIES Escalation @ 7% per year				1,301,215	
TOTAL ESTIMATED COST				5,487,933	
14. FEE OR PROFIT					
TOTAL ESTIMATED COST AND FEE OR PROFIT				5,487,933	

MLGW INDUSTRIAL FUEL GAS DEMONSTRATION PLANT
ESTIMATE OF COST - PHASE II CONSTRUCTION
MARCH 1980 - FEBRUARY 1984

DECEMBER 1980 - FEBRUARY 1984

PERSONNEL	MONTHLY SALARY	NO. OF MONTHS	TOTAL SALARY	OVERHEAD 52%	ESTIMATED COST
Program Manager	\$2,500	39	\$ 97,500	\$ 50,700	\$ 148,200
Engineering Manager	2,350	39	91,650	47,660	139,310
Contract Administrator	2,150	39	83,850	43,600	127,450
Project Engineers (4)	2,250	39	351,000	182,520	533,520
Design Engineers (2)	2,200	39	171,600	89,230	260,830
Process Engineers (2)	2,150	39	167,700	87,200	254,900
Engineers (2)	1,850	39	144,300	75,040	219,340
Procurement Coordinator (2)	1,850	39	144,300	75,040	219,340
Accountants (2)	2,000	39	156,000	81,120	237,120
Draftsman (2)	1,350	39	105,300	54,750	160,050
Clerical (2)	1,200	39	93,600	48,670	142,270
			\$1,606,800	\$835,530	\$2,442,330

<u>TRAVEL</u>					
DESTINATION	NO. OF TRIPS	AIR FARE	LIVING EXPENSE	CAR RENTAL	ESTIMATED COST
Livingston, NJ (3 days)	117	\$288	\$180	\$75	\$63,531
Chicago, IL (2 days)	40	172	120	60	14,080
Pittsburgh, PA (2 days)	24	222	120	60	9,648
Knoxville, TN (2 days)	18	146	120	60	5,868
TOTAL TRAVEL					\$93,127

*32-23-1st
32-2nd year
peak at 38*

*Come down
35 - end of
Phase II*

MLGW 20 - in Phase III

SUBCONTRACTS

DESCRIPTION	CONSULTANT/ CONTRACTOR	BASIS OF ESTIMATE	ESTIMATED COST
Engineering Services at FWEC	D. Aubrecht	EE	\$ 273,000
Construct Electric Transmission Lines to Site Boundary	Unknown	EE	763,526
Construct 6" Natural Gas Line to Site Boundary	Unknown	EE	95,000
Construct 20" Water Main to Site Boundary	Unknown	EE	330,000
Independent External Auditors	Delotte, Haskins, & Sells	EE	75,700

TOTAL SUBCONTRACTS \$1,537,226

TOTAL ESTIMATED COSTS 4,072,683

G & A @ 2.8% 114,035

\$4,186,718

ESCALATION @ 7% PER
YEAR 1,301,215

TOTAL ESTIMATED COST \$5,487,933

763,526
95,000
330,000
114,035

1,188,500

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO. 1	NO. OF PAGES 21
NAME OF OFFEROR		SUPPLIES AND/OR SERVICES TO BE FURNISHED			
INSTITUTE OF GAS TECHNOLOGY		INDUSTRIAL FUEL GAS DEMONSTRATION			
HOME OFFICE ADDRESS		PLANT PROGRAM PHASE II			
3424 SOUTH STATE STREET					
CHICAGO, ILLINOIS 60616					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED		TOTAL AMOUNT OF PROPOSAL	GOV'T SOLICITATION NO.		
		\$ 11,624,644			
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST	REFERENCE
a. PURCHASED PARTS			899,851		
b. SUBCONTRACTED ITEMS			1697,642		
c. OTHER — (1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				2597,493	RFC C
2. MATERIAL OVERHEAD ^a (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	
DIRECT LABOR AT IGT FACILITY				1909,198	
DIRECT LABOR AT DOE FACILITY				2192,302	
SEE LABOR DETAILS					
TOTAL DIRECT LABOR				4101,500	REF A
4. LABOR OVERHEAD (Specify Department or Cost Center) ^a		O.H. RATE	X BASE =	EST COST (\$)	
DIRECT LABOR BASE - IGT FACILITY		99%	1909,198	1890,106	
TOTAL DIRECT COST BASE-DOE FACILITY		17%	4847,695	824,108	
TOTAL LABOR OVERHEAD				2714,214	REF B
5. SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)				305,800	REF C
7. TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST (\$)		
a. TRANSPORTATION			51,648		
b. PER DIEM OR SUBSISTENCE			26,100		
TOTAL TRAVEL				77,748	REF C
8. CONSULTANTS (Identify—purpose—rate)			EST COST (\$)		
TO PROVIDE IGT WITH TECHNICAL EXPERTISE IN IND. FUEL GAS			12,000		
DEMONSTRATION PLANT OPERATIONS FOR A TOTAL OF 30 DAYS at					
\$400/day					
TOTAL CONSULTANTS				12,000	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)				112,000	
TOTAL DIRECT COST AND OVERHEAD				9920,755	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 9.0% of cost element Nos. 10) ^a				892,868	REF B
12. ROYALTIES					
TOTAL ESTIMATED COST				10813,623	
14. FEE OR PROFIT				811,021	
TOTAL ESTIMATED COST AND FEE OR PROFIT				11624,644	

PHASE II
Estimated Cost by Tasks
March 1980 thru February 1984

ELEMENTS OF COST	Task 2	Task 4	Task 6	Task 7	Task 8	Task 10	Phase II		TOTAL		
	IGT Facility	Facility	IGT Facility	IGT Facility	DOE Facility	IGT Facility	IGT Facility	DOE Facility			
DIRECT LABOR	81158	281847	110726	157665	911149	888887	1281153	388915	1909198	2192302	4101500
LABOR OVERHEAD 99%	80346	279029	109619	156088	-	879998	-	385026	1890106	-	1890106
MATERIAL & SERVICES					240786	54100	604965		54100	845751	899851
SUBCONTRACTED ITEMS					588362		1109280		-	1697642	1697642
SPECIAL EQUIPMENT						265800	40000		265800	40000	305800
CONSULTANTS						12000			12000		12000
TRAVEL						-		77748	77748	-	77748
OTHER DIRECT COSTS					27000	40000	45000		40000	72000	112000
SUB-TOTAL	161504	560876	220345	313753	1767297	2140785	3080398	851689	4248952	4847695	9096647
OVERHEAD 17%					300440	-	523668		-	824108	824108
SUB - TOTAL	161504	560876	220345	313753	2067737	2140785	3604066	851689	4248952	5671803	9920755
G & A	14535	50479	19831	28238	186096	192671	324366	76652	382406	510462	892868
TOTAL ESTIMATED COST	176039	611355	240176	341991	2253833	2333456	3928432	928341	4631358	6182265	10813623
FEE											811,021
TOTAL EST COST & FEE											11,624,644

REFERENCE A - Basis for Labor Cost Estimates

A breakdown of labor cost estimate by personnel classification is given in the attached table. The rates given for labor classifications are current IGT average hourly rates for the labor classification shown.

The hourly rates given for full-time employees of IGT are based on 2016 hours per year (2080 hours less 64 hours for eight holidays). For manpower deployment purposes, it is assumed that an individual's productive year is 1920 hours, (2016 less 96 hours for vacation, sick leave, and administrative leave), and a productive man-month is 160 hours.

It is IGT's practice to make general salary adjustments on September 1, coincident with the beginning of its fiscal year. For estimating purposes, it is assumed that a contract would be awarded 90 days after submission of the proposal. In the event that the period of performance would extend beyond September 1, the current labor rates given in the attached table have been escalated by the factor of .075 for each 12 month period beyond September 1 to account for anticipated general salary increases.

The following direct paid fringe benefits are included in the average hourly rates given in the labor cost estimate tables:

1. Employer contribution to social security (FICA).
2. IGT contribution to Teachers Insurance and Annuity Association (TIAA) retirement.
3. Blue Cross and Blue Shield Hospitalization provided by IGT.
4. TIAA Major Medical Insurance paid for by IGT.
5. Disability Insurance paid for by IGT.
6. North American Life Insurance Co. life insurance paid for by IGT for non-union employees.
7. TIAA life insurance paid for by IGT for union employees.
8. Unemployment tax paid for by IGT.
9. Dental Insurance paid for by IGT.

The following are items which do not appear in the direct labor cost estimate but are included in the Indirect Expense pools (See Reference B):

1. Vacation
2. Illness
3. Administrative Leave
4. Travel Accident Death and Disability Insurance.

LABOR COST ESTIMATE BREAKDOWN

P 179611/79A		TASK 2 2												
NAME/RATE		9/79	10/79	11/79	12/79	1/80	2/80	3/80	4/80	5/80	6/80	7/80	8/80	TOTALS
SR PROFNL	HRS							160	160	160	160	160	160	960
21.15	\$							3384.00	3384.00	3384.00	3384.00	3384.00	3384.00	20304.00
RESEARCH MGR	HRS							160	160	160	160	160	160	960
19.59	\$							3134.40	3134.40	3134.40	3134.40	3134.40	3134.40	18806.40
TOTALS								320	320	320	320	320	320	1920
								6518.40	6518.40	6518.40	6518.40	6518.40	6518.40	39110.40

P 179611/79A		TASK 2 2												
NAME/RATE		9/80	10/80	11/80	12/80	1/81	2/81	3/81	4/81	5/81	6/81	7/81	8/81	TOTALS
SR PROFNL	HRS	160	160	160	160	160	160							960
22.74	\$	3638.40	3638.40	3638.40	3638.40	3638.40	3638.40							21830.40
RESEARCH MGR	HRS	160	160	160	160	160	160							960
21.06	\$	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60							20217.60
TOTALS		320	320	320	320	320	320							1920
		7008.00	7008.00	7008.00	7008.00	7008.00	7008.00							42048.00

TOTAL HOURS 3840
TOTAL COST 81158.40

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 2 4												
NAME/RATE		9/80	10/80	11/80	12/80	1/81	2/81	3/81	4/81	5/81	6/81	7/81	8/81	TOTALS
SR PROFNL	MRS							150	160	160	160	160	160	960
22.74	\$							3638.40	3638.40	3638.40	3638.40	3638.40	3638.40	21830.40
RESEARCH MGR	MRS							160	160	160	160	160	160	960
21.06	\$							3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	20217.60
TOTALS								320	320	320	320	320	320	1920
								7008.00	7008.00	7008.00	7008.00	7008.00	7008.00	42048.00

P 179011/79A		TASK 2 4												
NAME/RATE		9/81	10/81	11/81	12/81	1/82	2/82	3/82	4/82	5/82	6/82	7/82	8/82	TOTALS
SR PROFNL	MRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
24.44	\$	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	3910.40	46924.80
RESEARCH MGR	MRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
22.64	\$	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	43468.80
TOTALS		320	320	320	320	320	320	320	320	320	320	320	320	3840
		7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	7532.80	90393.60

P 179011/79A		TASK 2 4												
NAME/RATE		9/82	10/82	11/82	12/82	1/83	2/83	3/83	4/83	5/83	6/83	7/83	8/83	TOTALS
SR PROFNL	MRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
26.27	\$	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	4203.20	50438.40
RESEARCH MGR	MRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
24.34	\$	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	46732.80
TOTALS		320	320	320	320	320	320	320	320	320	320	320	320	3840
		8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	8097.60	97171.20

P 179011/79A		TASK 2 4												
NAME/RATE		9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	TOTALS
SR PROFNL	MRS	160	160	160	160	160	160							960
28.25	\$	4520.00	4520.00	4520.00	4520.00	4520.00	4520.00							27120.00
RESEARCH MGR	MRS	160	160	160	160	160	160							960
26.16	\$	4185.60	4185.60	4185.60	4185.60	4185.60	4185.60							25113.60
TOTALS		320	320	320	320	320	320							1920
		8705.60	8705.60	8705.60	8705.60	8705.60	8705.60							52233.60

TOTAL 45JRS 11520
TOTAL COST 281866.40

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 2 6												
NAME/RATE		9/82	10/82	11/82	12/82	1/83	2/83	3/83	4/83	5/83	6/83	7/83	8/83	TOTALS
EDITING	MRS							150	160	160	160	160	160	960
10.19	\$							1630.40	1630.40	1630.40	1630.40	1630.40	1630.40	9782.40
DRAFTING	MRS							80	80	80	80	80	80	480
10.19	\$							815.20	815.20	815.20	815.20	815.20	815.20	4891.20
TECH SUPV	MRS							150	160	160	160	160	160	960
19.99	\$							3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	19190.40
ENGINEER	MRS							80	80	80	80	80	80	480
15.06	\$							1204.80	1204.80	1204.80	1204.80	1204.80	1204.80	7228.80
ASST DIRECT	MRS							80	80	80	80	80	80	480
25.57	\$							2045.60	2045.60	2045.60	2045.60	2045.60	2045.60	12273.60
TOTALS								560	560	560	560	560	560	3360
								8894.40	8894.40	8894.40	8894.40	8894.40	8894.40	53366.40

P 179011/79A		TASK 2 6												
NAME/RATE		9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	TOTALS
EDITING	MRS	160	160	160	160	160	160							960
10.95	\$	1752.00	1752.00	1752.00	1752.00	1752.00	1752.00							10512.00
DRAFTING	MRS	80	80	80	80	80	80							480
10.95	\$	876.00	876.00	876.00	876.00	876.00	876.00							5256.00
TECH SUPV	MRS	160	160	160	160	160	160							960
21.49	\$	3438.40	3438.40	3438.40	3438.40	3438.40	3438.40							20630.40
ENGINEER	MRS	80	80	80	80	80	80							480
16.19	\$	1295.20	1295.20	1295.20	1295.20	1295.20	1295.20							7771.20
ASST DIRECT	MRS	80	80	80	80	80	80							480
27.48	\$	2198.40	2198.40	2198.40	2198.40	2198.40	2198.40							13190.40
TOTALS		560	560	560	560	560	560							3360
		9560.00	9560.00	9560.00	9560.00	9560.00	9560.00							57360.00

TOTAL HOURS 6720
TOTAL COST 110726.40

LABOR COST ESTIMATE BREAKDOWN

P 179G11/19A		TASK 2.7												
NAME/RATE		9/82	10/82	11/82	12/82	1/83	2/83	3/83	4/83	5/83	6/83	7/83	8/83	TOTALS
FULL PROFNL	HRS										160	160	160	480
18.20	\$										2912.00	2912.00	2912.00	8736.00
SR PROFNL	HRS										160	160	160	480
26.27	\$										4203.20	4203.20	4203.20	12609.60
RESEARCH MOR	HRS										160	160	160	480
24.34	\$										3894.40	3894.40	3894.40	11683.20
ASSOC DIRECT	HRS										80	80	80	240
29.89	\$										2391.20	2391.20	2391.20	7173.60
EDITING	HRS										80	80	80	240
10.19	\$										815.20	815.20	815.20	2445.60
DRAFTING	HRS										160	160	160	480
10.19	\$										1630.40	1630.40	1630.40	4891.20
TECH SUPV	HRS										960	960	960	2880
19.99	\$										18190.40	18190.40	18190.40	54571.20
TECH SUPT	HRS										800	800	800	2400
18.44	\$										14752.00	14752.00	14752.00	44256.00
SR TECH	HRS										800	800	800	2400
14.03	\$										11224.00	11224.00	11224.00	33672.00
TECHNICIAN	HRS										4000	4000	4000	12000
8.99	\$										35960.00	35960.00	35960.00	107880.00
SCIENTIST	HRS										160	160	160	480
12.65	\$										2024.00	2024.00	2024.00	6072.00
ENGINEER	HRS										800	800	800	2400
15.06	\$										12048.00	12048.00	12048.00	36144.00
ASST DIRECT	HRS										80	80	80	240
25.57	\$										2045.60	2045.60	2045.60	6136.80
TOTALS											8400	8400	8400	25200
											113090.40	113090.40	113090.40	339271.20

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 2 7											
NAME/RATE	9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	TOTALS
FULL PROFNL HRS	160	160	160	160	160	160							960
19.56	\$ 3129.60	3129.60	3129.60	3129.60	3129.60	3129.60							18777.60
SN PROFNL HRS	160	160	160	160	160	160							960
28.25	\$ 4520.00	4520.00	4520.00	4520.00	4520.00	4520.00							27120.00
RESEARCH MGR HRS	160	160	160	160	160	160							960
26.16	\$ 4185.60	4185.60	4185.60	4185.60	4185.60	4185.60							25113.60
ASSOC DIRECT HRS	80	80	80	80	80	80							480
32.13	\$ 2570.40	2570.40	2570.40	2570.40	2570.40	2570.40							15422.40
EDITING HRS	80	80	80	80	80	80							480
10.95	\$ 876.00	876.00	876.00	876.00	876.00	876.00							5256.00
DRAFTING HRS	160	160	160	160	160	160							960
10.95	\$ 1752.00	1752.00	1752.00	1752.00	1752.00	1752.00							10512.00
TECH SUPV HRS	960	960	960	960	960	960							5760
21.49	\$ 20630.40	20630.40	20630.40	20630.40	20630.40	20630.40							123782.40
TECH SUPT HRS	800	800	800	800	800	800							4800
19.82	\$ 15856.00	15856.00	15856.00	15856.00	15856.00	15856.00							95136.00
SR TECH HRS	800	800	800	800	800	800							4800
15.08	\$ 12064.00	12064.00	12064.00	12064.00	12064.00	12064.00							72384.00
TECHNICIAN HRS	4000	4000	4000	4000	4000	4000							24000
9.67	\$ 38680.00	38680.00	38680.00	38680.00	38680.00	38680.00							232080.00
SCIENTIST HRS	160	160	160	160	160	160							960
13.60	\$ 2176.00	2176.00	2176.00	2176.00	2176.00	2176.00							13056.00
ENGINEER HRS	800	800	800	800	800	800							4800
16.19	\$ 12952.00	12952.00	12952.00	12952.00	12952.00	12952.00							77712.00
ASST DIRECT HRS	80	80	80	80	80	80							480
27.48	\$ 2198.40	2198.40	2198.40	2198.40	2198.40	2198.40							13190.40
TOTALS	8400	8400	8400	8400	8400	8400							50400
	121590.40	121590.40	121590.40	121590.40	121590.40	121590.40							729562.40
TOTAL HOURS 75600													
TOTAL COST 1068813.90													

LABOR COST ESTIMATE BREAKDOWN

P 179611/79A		TASK 2 8												
NAME/RATE		9/79	10/79	11/79	12/79	1/80	2/80	3/80	4/80	5/80	6/80	7/80	8/80	TOTALS
FULL PROFNL	MRS							80	80	80	160	160	160	720
14.65	\$							1172.00	1172.00	1172.00	2344.00	2344.00	2344.00	10548.00
SR PROFNL	MRS							240	240	240	320	320	320	1680
21.15	\$							5076.00	5076.00	5076.00	6768.00	6768.00	6768.00	35932.00
RESEARCH MGR	MRS							160	160	160	160	160	160	960
19.59	\$							3134.40	3134.40	3134.40	3134.40	3134.40	3134.40	18886.40
ASSOC DIRECT	MRS							80	80	80	80	80	80	480
24.06	\$							1924.80	1924.80	1924.80	1924.80	1924.80	1924.80	11548.80
EDITING	MRS							160	160	160	160	160	160	960
8.20	\$							1312.00	1312.00	1312.00	1312.00	1312.00	1312.00	7872.00
DRAFTING	MRS							240	240	240	240	240	240	1440
8.20	\$							1968.00	1968.00	1968.00	1968.00	1968.00	1968.00	11808.00
TECH SUPV	MRS							320	320	320	1120	1120	1120	4320
16.09	\$							5148.80	5148.80	5148.80	18020.80	18020.80	18020.80	69508.80
TECH SUPT	MRS							160	160	160	800	800	800	2880
14.84	\$							2374.40	2374.40	2374.40	11872.00	11872.00	11872.00	42739.20
SR TECH	MRS							640	640	640	960	960	960	4800
11.29	\$							7225.60	7225.60	7225.60	10838.40	10838.40	10838.40	54192.00
TECHNICIAN	MRS							800	800	800	4320	4320	4320	15360
7.24	\$							5792.00	5792.00	5792.00	31276.80	31276.80	31276.80	11206.40
SCIENTIST	MRS							160	160	160	160	160	160	960
10.18	\$							1628.80	1628.80	1628.80	1628.80	1628.80	1628.80	9772.80
ENGINEER	MRS							960	960	960	1120	1120	1120	6240
12.12	\$							11435.20	11435.20	11435.20	13574.40	13574.40	13574.40	75628.80
ASST DIRECT	MRS							80	80	80	80	80	80	480
20.58	\$							1646.40	1646.40	1646.40	1646.40	1646.40	1646.40	9878.40
TOTALS								4080	4080	4080	9680	9680	9680	41280
								50038.40	50038.40	50038.40	105308.80	105308.80	105308.80	416904.60

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 2.0												
NAME/RATE		9/80	10/80	11/80	12/80	1/81	2/81	3/81	4/81	5/81	6/81	7/81	8/81	TOTALS
FULL PROFNL	HRS	140	160	160	160	140	140	160	160	140	140	160	160	1920
15.75	\$	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	2520.00	30240.00
SR PROFNL	HRS	320	320	320	320	320	320	320	320	320	320	320	320	3840
22.74	\$	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	7276.80	87321.60
RESEARCH MGR	HRS	140	160	160	160	140	160	160	160	160	140	160	160	1920
21.06	\$	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	40435.20
ASSOC DIRECT	HRS	80	80	80	80	80	80	80	80	80	80	80	80	960
25.86	\$	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	2068.80	24825.60
EDITING	HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
8.81	\$	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	1409.60	16915.20
DRAFTING	HRS	240	240	240	240	240	240	240	240	240	240	240	240	2880
8.81	\$	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	2114.40	25372.80
TECH SUPV	HRS	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	13440
17.30	\$	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	19376.00	232512.00
TECH SUPT	HRS	800	800	800	800	800	800	800	800	800	800	800	800	9600
15.95	\$	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	12760.00	153120.00
SR TECH	HRS	960	960	960	960	960	960	960	960	960	960	960	960	11520
12.14	\$	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	11654.40	139848.00
TECHNICIAN	HRS	4320	4320	4320	4320	4320	4320	4320	4320	4320	4320	4320	4320	51840
7.78	\$	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	33609.60	40403315.20
SCIENTIST	HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
10.94	\$	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	1750.40	21004.80
ENGINEER	HRS	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	13440
13.03	\$	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	14593.60	174123.20
ASST DIRECT	HRS	80	80	80	80	80	80	80	80	80	80	80	80	960
22.12	\$	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	1769.60	21235.20
TOTALS		9680	9680	9680	9680	9680	9680	9680	9680	9680	9680	9680	9680	116160
		114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	114272.00	1388880.00

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 2 B											
NAME/RATE	9/A1	10/81	11/81	12/81	1/A2	2/A2	3/A2	4/82	5/A2	6/A2	7/82	8/82	TOTALS
RESEARCH MGR MRS 22.64	160	160	160	160	160	160	160	160	160	160	160	160	1920
	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	43448.80
TECH SUPV MRS 18.59	160	160	160	160	160	160	160	160	160	160	160	160	1920
	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	2974.40	34492.80
TOTALS	320	320	320	320	320	320	320	320	320	320	320	320	3840
	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	6596.80	77941.60

P 179011/79A		TASK 2 B											
NAME/RATE	9/A2	10/82	11/82	12/82	1/A3	2/A3	3/A3	4/83	5/83	6/A3	7/83	8/83	TOTALS
RESEARCH MGR MRS 24.34	160	160	160	160	160	160	160	160	160	160	160	160	1920
	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	46732.80
TECH SUPV MRS 19.99	160	160	160	160	160	160	160	160	160	160	160	160	1920
	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	3198.40	38380.80
TOTALS	320	320	320	320	320	320	320	320	320	320	320	320	3840
	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	7092.80	85113.60

P 179011/79A		TASK 2 B											
NAME/RATE	9/A3	10/83	11/83	12/83	1/A4	2/A4	3/A4	4/84	5/84	6/A4	7/84	8/84	TOTALS
FULL PROFNL MRS 19.56	160	160	160	160	160	160							960
	3129.60	3129.60	3129.60	3129.60	3129.60	3129.60							18777.60
RESEARCH MGR MRS 26.16	320	320	320	320	320	320							1920
	8371.20	8371.20	8371.20	8371.20	8371.20	8371.20							50227.20
TECH SUPV MRS 21.49	320	320	320	320	320	320							1920
	6876.80	6876.80	6876.80	6876.80	6876.80	6876.80							41260.80
TOTALS	800	800	800	800	800	800							4800
	18377.60	18377.60	18377.60	18377.60	18377.60	18377.60							110265.60

TOTAL MOJRS 169920
TOTAL COST 2114856.00

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 2 8												
NAME/RATE		9/79	10/79	11/79	12/79	1/80	2/80	3/80	4/80	5/80	6/80	7/80	8/80	TOTALS
RESEARCH MGR MRS								40	40	40	40	40	40	240
19.50	\$							783.60	783.60	783.60	783.60	783.60	783.60	4701.60
TECHNICIAN MRS								240	240	240	240	240	240	1440
7.24	\$							1737.60	1737.60	1737.60	1737.60	1737.60	1737.60	10425.60
ENGINEER MRS								184	184	184	184	184	184	1104
12.12	\$							2230.08	2230.08	2230.08	2230.08	2230.08	2230.08	13380.48
ASST DIRECT MRS								32	32	32	32	32	32	192
20.50	\$							658.56	658.56	658.56	658.56	658.56	658.56	3951.36
TOTALS								496	496	496	496	496	496	2976
								5409.84	5409.84	5409.84	5409.84	5409.84	5409.84	32459.04

P 179G11/79A		TASK 2 8												
NAME/RATE		9/80	10/80	11/80	12/80	1/81	2/81	3/81	4/81	5/81	6/81	7/81	8/81	TOTALS
RESEARCH MGR	MRS	40	40	40	40									160
21.06	\$	842.40	842.40	842.40	842.40									3369.60
TECHNICIAN	MRS	240	240	240										720
7.78	\$	1867.20	1867.20	1867.20										5601.60
ENGINEER	MRS	184	184	184	184	24	24							704
13.03	\$	2397.52	2397.52	2397.52	2397.52	312.72	312.72							16215.52
ASST DIRECT	MRS	32	32	32	32	16	16							160
22.12	\$	707.84	707.84	707.84	707.84	353.92	353.92							3539.20
TOTALS		496	496	496	256	40	40							1824
		5814.96	5814.96	5814.96	3947.76	666.64	666.64							22725.92

TOTAL HOURS 4800
TOTAL COST 55184.96

LABOR COST ESTIMATE BREAKDOWN

P 179G11/79A		TASK 210											
NAME/RATE	9/79	10/79	11/79	12/79	1/80	2/80	3/80	4/80	5/80	6/80	7/80	8/80	TOTALS
RESEARCH MGR HRS							150	160	160	160	160	160	960
19.59							3134.40	3136.40	3136.40	3136.40	3136.40	3136.40	18806.40
ASSOC DIRECT HRS							160	160	160	160	160	160	960
24.06							3849.60	3849.60	3849.60	3849.60	3849.60	3849.60	23097.60
TOTALS							320	320	320	320	320	320	1920
							6984.00	6986.00	6986.00	6986.00	6986.00	6986.00	41904.00

P 179G11/79A		TASK 210											
NAME/RATE	9/80	10/80	11/80	12/80	1/81	2/81	3/81	4/81	5/81	6/81	7/81	8/81	TOTALS
RESEARCH MGR HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
21.06	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	3369.60	40435.20
ASSOC DIRECT HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
25.86	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	4137.60	49451.20
TOTALS	320	320	320	320	320	320	320	320	320	320	320	320	3840
	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	7507.20	90886.40

P 179G11/79A		TASK 210											
NAME/RATE	9/81	10/81	11/81	12/81	1/82	2/82	3/82	4/82	5/82	6/82	7/82	8/82	TOTALS
RESEARCH MGR HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
22.84	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	3622.40	43468.80
ASSOC DIRECT HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
27.80	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	4448.00	53376.00
TOTALS	320	320	320	320	320	320	320	320	320	320	320	320	3840
	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	8070.40	96844.80

P 179G11/79A		TASK 210											
NAME/RATE	9/82	10/82	11/82	12/82	1/83	2/83	3/83	4/83	5/83	6/83	7/83	8/83	TOTALS
RESEARCH MGR HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
24.34	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	3894.40	46732.80
ASSOC DIRECT HRS	160	160	160	160	160	160	160	160	160	160	160	160	1920
29.89	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	4782.40	57388.80
TOTALS	320	320	320	320	320	320	320	320	320	320	320	320	3840
	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	8676.80	104121.60

LABOR COST ESTIMATE BREAKDOWN

P 179011/79A		TASK 210										TOTALS
NAME/RATE	9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	
RESEARCH MGR MRS 26.16	140	160	160	160	140	160						960
\$ 4185.60	4185.60	4185.60	4185.60	4185.60	4185.60	4185.60						25113.60
ASSOC DIRECT MRS 32.13	140	160	160	160	140	160						960
\$ 5140.80	5140.80	5140.80	5140.80	5140.80	5140.80	5140.80						30844.80
TOTALS	320	320	320	320	320	320						1920
	9326.40	9326.40	9326.40	9326.40	9326.40	9326.40						55958.40
												TOTAL HOURS 19360
												TOTAL COST 388915.20

REFERENCE B - Basis for Overhead and G&A Estimate

IGT presently operates under a negotiated provisional overhead rate subject to post audit adjustment for all of its cost reimbursement type Government contracts. The cognizant agency performing audits for all Government contracts is the Defense Contract Audit Agency, 527 S. LaSalle St., Chicago, Illinois 60605 (312) 353-6870.

The indirect expense rate of 99.0% is applied to direct labor, and a separate G&A expense rate of 9.0% is applied to the total direct and indirect cost. The indirect expense rates beyond March 10, 1978 reflects IGT's election to use the CAS modified contract coverage clause 332. Briefly, this clause states the contractor will comply with CAS 401, Consistency in Estimating, Accumulating, and Reporting Costs, and 402, Consistency in Allocating Costs Incurred for the Same Purpose.

The methods illustrated in the IGT document entitled "Proposed Methods and Computation of Provisional Indirect Expense Rate for 1972 and Subsequent Fiscal Years," were used as the basis for determining the indirect expense rates, subject to applicable Cost Accounting Standards and Government Procurement Regulations. The computation of these rates was also based on IGT's fiscal 1979 preliminary operating budget.

The indirect expense pools included the following elements:

1. General and administrative expense
2. Clerical, secretarial and reproduction staff salaries and related fringe benefits
3. Salaries and related fringe benefits for vacation, sickness and administrative leave
4. Office supplies, telephone (except project related long distance), postage, insurance and duplication
5. Occupancy costs
6. Library service, computer rental and other expenses of a general nature not specifically assigned to other areas
7. Depreciation of facilities and equipment.

All costs allocated to the operation of the IGT Education Division are excluded from the overhead pool for Government contracts.

The indirect Expense rate of 17.0% is applied to total direct cost at DOE Facility.

REFERENCE C - Basis for Direct Cost Estimates

The estimated cost given for materials, supplies, and equipment items are approximate, based on the best information we have in hand from manufacturers' or suppliers' published price catalogs, from past experience in purchase of similar items, from verbal or written quotes, or from engineering estimates.

IGT has complete machine shop facilities for the fabrication of special items of experimental and test equipment. The decision to fabricate equipment is made only in the event that it is established that a satisfactory item cannot be obtained from a regular commercial source.

Selection of vendors for commercially available items is made on the basis of competitive bidding, product quality and the vendor's ability to deliver the item when required.

Travel cost estimates are based on past experience for actual costs (not per diem) for similar trips as those specified above. A dollar value for ground transportation is included in Item 7a, as opposed to 7b, of Optional Form 60. Each employee is required to maintain a detailed record of actual expenses. See the attached table for a detailed cost estimate breakdown of travel expenses.

Proposal No. P179X11/79A

REFERENCE C - Basis for Direct Cost Estimate

The following supports lines 1a and 1b of OPTIONAL FORM 60

PURCHASED PARTS AND SUBCONTRACTED ITEMS

TASK NO.	DESCRIPTION	VENDOR	QUOTE CODE *	NO.	TOTAL COST
7	Coal 1800 Tons @ \$45/ton	VARIOUS	EE		81,000
7	Oxygen 27,000,000SCF @.29/c	VARIOUS	EE		79,650
7	Coke 90 Tons @ 45/ton	VARIOUS	EE		4,050
7	Steam 2,160,000 LBS. @.25/c	VARIOUS	EE		5,400
7	Natural Gas 10,350,000SCF @3.00/M	VARIOUS	EE		31,050
7	Electricity 135,000KW @ .034/ea	VARIOUS	EE		4,590
7	Nitrogen 12,960,000SCF @.26/c plus \$150 per month	VARIOUS	EE		35,046
8	Misc. Gases	VARIOUS	EE		32,100
8	Burner Parts & Modification	VARIOUS	EE		8,500
8	Misc. Parts & Fittings	VARIOUS	EE		3,000
8	Misc. Operating Supplies	VARIOUS	EE		5,000
8	N2 O2 in Cylinders	VARIOUS	EE		5,000
8	Glassware & other lab supplies	VARIOUS	EE		500
8	Misc. pipes, filters, fittings refractories valves and other supplies	VARIOUS	EE		30,000

*Quote Code:

VQ - Verbal Quote
WQ - Written Quote
CA - Catalog Price
EE - Engineering Estimate
CI - Current Invoice

Proposal No. P179X11/79A

REFERENCE C - Basis for Direct Cost Estimate

The following supports lines 1a and 1b of OPTIONAL FORM 60

PURCHASED PARTS & SUBCONTRACTED ITEMS

TASK NO.	DESCRIPTION	VENDOR	QUOTE CODE *	NO.	TOTAL COST
8	Coal 4500 tons @\$45/ton	VARIOUS	EE		202,500
8	Oxygen 67,5-00SCF@/29/c	VARIOUS	EE		195,750
8	Coke 300 tons @\$45/ton	VARIOUS	EE		13,500
8	Steam 5,400,000LBS. @.25/c	VARIOUS	EE		13,500
8	Natural Gas 17,250,000 SCF @\$3.00/M	VARIOUS	EE		51,750
8	Electricity 337,500 kw @ .034/ea	VARIOUS	EE		11,475
8	Nytrogen 32,400,000 SCF @.26/c plus 150 per mo.	VARIOUS	EE		86,490
	TOTAL PURCHASE PART LINE 1a				899,851
7	Mechanical Services	MORRISON	EE		258,153
7	Instrument & Electrical Service	PANELLITE	EE		264,953
7	Insulation Service	ILLINOIS INSULATORS	EE		65,256
8	Mechancial Services	MORRISON	EE		458,582
8	Instrument & Electrical Services	PANELLIT	EE		396,684
8	Insulation Services	ILLINOIS INSULATORS	EE		104,014
8	Analytical Services	VARIOUS	EE		150,000

*Quote Code: Total Subcontrated
Item 1 b

VQ - Verbal Quote Total Direct

WQ - Written Quote Materials

CA - Catalog Price

EE - Engineering Estimate

CI - Current Invoice

1,697,642

2,597,493

Proposal No. P179X11/79A

REFERENCE C - Basis for Direct Cost Estimate

The following supports line 6 of OPTIONAL FORM 60

SPECIAL EQUIPMENT

[illegible]

***Quote Code:**

VQ - Verbal Quote
WQ - Written Quote
CA - Catalog Price
EE - Engineering Estimate
CI - Current Invoice

Proposal No. P179X11/79AREFERENCE C - Basis for Direct Cost Estimate

The following supports lines 7a and 7b of Optional Form 60

TRAVEL SCHEDULE

Task No.	Men	Days	Round Trip	Airfare	Ground Trans.	Subsistence	No. of Trips	TOTAL
10	1	2	MEMPHIS, TENN	156	100	150	12	4,872
10	2	4	LIVINGSTON, N.J.	420	120	300	48	40,320
10	1	2	LIVINGSTON, N.J.	210	100	150	48	22,080
10	1	1	MEMPHIS, TENN.	156	60	75	36	10,476
			TOTAL					<u>77,748</u>

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR <u>DELTA REFINING COMPANY,</u> <u>A DIV. OF EARTH RESOURCES COMPANY</u>			SUPPLIES AND/OR SERVICES TO BE FURNISHED PHASE II - DEMONSTRATION PLANT DESIGN AND CONSTRUCTION (PROJECT TEAM)		
HOME OFFICE ADDRESS <u>P. O. Box 9097</u> <u>MEMPHIS, TENNESSEE 38109</u>					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED <u>MEMPHIS, TENNESSEE</u>			TOTAL AMOUNT OF PROPOSAL \$		GOV'T SOLICITATION NO.
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST	REFER- ENCE
a. PURCHASED PARTS			/		
b. SUBCONTRACTED ITEMS					
c. OTHER - (1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	
Project Manager		6,240	17	106,080	
Project/Process Engineers		25,350	15	380,250	
Contract Admin-Accountant		6,240	10	74,880	
Technician		6,240	10	62,400	
Secretary		6,240	6	37,440	
TOTAL DIRECT LABOR					661,050
4. LABOR OVERHEAD (Specify Department or Cost Center)		O.H. RATE	X BASE =	EST COST (\$)	
Salaried Workforce		54%	661,050	356,967	
TOTAL LABOR OVERHEAD					356,967
5. SPECIAL TESTING (Including field work at Government installations)				EST COST (\$)	
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)				EST COST (\$)	
a. TRANSPORTATION				163,800	
b. PER DIEM OR SUBSISTENCE				140,400	
TOTAL TRAVEL					304,200
8. CONSULTANTS (Identify-purpose-rate)				EST COST (\$)	
TOTAL CONSULTANTS					
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					145,000
TOTAL DIRECT COST AND OVERHEAD					1,467,217
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate <u>42 %</u> of cost element Nos. <u>3,4,7</u>)					616,231
12. AS PER Escalation - 10% of Items 3,4,7 (20th month, compounded)					238,719
TOTAL ESTIMATED COST					2,322,167
14. FEE OR PROFIT <u>10% of Total Cost</u>					232,217
TOTAL ESTIMATED COST AND FEE OR PROFIT					2,554,384

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

TYPED NAME AND TITLE		SIGNATURE	
NAME OF FIRM		DATE OF SUBMISSION	

EXHIBIT A—SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse)[illegible]

1. HAS ANY EXECUTIVE AGENCY OF THE UNITED STATES GOVERNMENT PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS?

☐ YES ☒ NO (If yes, identify below.)

NAME AND ADDRESS OF REVIEWING OFFICE AND INDIVIDUAL

TELEPHONE NUMBER/EXTENSION

II. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS PROPOSED CONTRACT?

☐ YES ☒ NO (If yes, identify on reverse or separate page)

III. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT?

☒ YES ☐ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☒ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

IV. DO YOU NOW HOLD ANY CONTRACT (Or, do you have any independently financed (IR&D) projects) FOR THE SAME OR SIMILAR WORK CALLED FOR BY THIS PROPOSED CONTRACT?

☐ YES ☒ NO (If yes, identify.):

V. DOES THIS COST SUMMARY CONFORM WITH THE COST PRINCIPLES SET FORTH IN AGENCY REGULATIONS?

☒ YES ☐ NO (If no, explain on reverse or separate page)

See Reverse for Instructions and Footnotes

OPTIONAL FORM 60 (10-71)

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and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the footnotes which follow.

EXHIBIT A—SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse)

1 HAS ANY EXECUTIVE AGENCY OF THE UNITED STATES GOVERNMENT PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS?

NAME AND ADDRESS OF REVIEWING OFFICE AND INDIVIDUAL

TELEPHONE NUMBER/EXTENSION

11. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS PROPOSED CONTRACT?

III. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT?

IV. DO YOU NOW HOLD ANY CONTRACT (Or, do you have any independently financed (IR&I) projects) FOR THE SAME OR SIMILAR WORK CALLED FOR BY THIS PROPOSED CONTRACT?

V. DOES THIS COST SUMMARY CONFORM WITH THE COST PRINCIPLES SET FORTH IN AGENCY REGULATIONS?

☒ YES ☐ NO (If no, explain on reverse or separate page)

See Reverse for Instructions and Footnotes

OPTIONAL FORM 60 (10-71)

PHASE II
RECRUITING AND PAYROLL COST ESTIMATE

POSITION	HIRE DATE MO. AFTER PHASE II	MONTHS ON PHASE II PAYROLL	DIRECT PAYROLL + % O.H.	RECRUITING COST	RELOCATION COST	TOTAL COST PHASE II
1) Plant Manager	20	28	\$ 157,500	\$ 15,000	\$ 8,000	\$ 180,500
2) Plant Manager Secretary	22	26	38,025	100	0	38,125
3) Opns. Dir.	25	23	79,342	10,000	5,000	94,342
4) Opns. Dir. Secretary	27	21	25,988	100	0	26,088
5) Opns. Mgr.	30	18	66,825	8,000	5,000	79,825
6) Opns. Supv. (4)	34	14	189,000	10,000	15,000	214,000
7) Asst. Opns. Supv. (5)	36	12	155,250	8,000	10,000	173,250
8) Timekeeper/Clerk	40	8	8,100	50	0	8,150
9) Operators						
a) Top 1/3 (32)	40	8	634,528	MLGW	0	634,528
b) Mid 1/2 (31)	42	6	419,120	MLGW	0	419,120
c) Btm 1/3 (31)	45	3	188,604	MLGW	0	188,604
10) Lab Manager	36	12	33,750	2,000	3,000	38,750
11) Secy/Clerk	42	6	6,750	75	0	6,825
12) Chemist (3)	44	4	27,000	3,000	0	30,000
13) Testers (5)	46	2	17,335	500	0	17,835

Note: Phase II Estimated at 48 months

PHASE IIRECRUITING AND PAYROLL COST ESTIMATE

POSITION	HIRE DATE MO. AFTER PHASE II	MONTHS PHASE II PAYROLL	DIRECT PAYROLL + % O.H.	RECRUITING COST	RELOCATION COST	TOTAL COST PHASE II
14) Samplers (6)	47	1	\$ 9,102	\$ 100	\$ 0	\$ 9,202
15) Process Eng. Mgr.	32	16	63,000	8,000	5,000	76,000
16) Process Engr. (4)	38	10	112,500	20,000	15,000	147,500
17) Technicians (2)	45	3	12,150	500	0	12,650
18) Drafting (2)	46	2	6,750	100	0	6,850
19) Maint. Dir.	28	20	83,250	8,000	5,000	96,250
20) Maint. Dir. Secy	30	18	22,275	75	0	22,350
21) Proj. Eng. Mgr.	36	12	44,550	7,000	5,000	56,550
22) Proj. Engrs. (4)	40	8	90,000	20,000	15,000	125,000
23) Technicians (2)	45	3	12,150	500	0	12,650
24) Draftsmen (2)	46	2	6,750	100	0	6,850
25) Prev. Maint. Sched/Cont. Supv.	38	10	30,375	6,000	3,000	39,375
26) Planners (2)	44	4	16,200	2,000	0	18,200

Note: Phase II Estimated at 48 months.

PHASE IIRECRUITING AND PAYROLL COST ESTIMATE

	<u>POSITION</u>	<u>HIRE DATE</u> <u>MO.</u> <u>AFTER PHASE II</u>	<u>MONTHS</u> <u>PHASE II</u> <u>PAYROLL</u>	<u>DIRECT</u> <u>PAYROLL</u> <u>+ % O.H.</u>	<u>RECRUITING</u> <u>COST</u>	<u>RELOCATION</u> <u>COST</u>	<u>TOTAL COST</u> <u>PHASE II</u>
27)	Sched/Control	46	2	\$ 3,375	\$ 2,000	\$ 0	\$ 5,375
28)	Maint. Mgr.	36	12	40,500	5,000	0	45,500
29)	Maint. Foremen (5)	40	8	112,500	3,000	0	115,500
30)	Craftsmen (28)	44	4	239,764	MLGW	0	239,764
31)	Apprentices (22)	46	2	84,282	MLGW	0	84,282
32)	Laborers (5)	47	1	8,450	MLGW	0	8,450
33)	Purchasing Agent	38	10	25,875	5,000	3,000	33,875
34)	Purch. Spec/Secy	42	6	7,425	75	0	7,500
35)	Warehouse Supv.	44	4	9,000	1,000	0	10,000
36)	Warehousemen (3)	46	2	10,815	200	0	11,015
37)	Marketing/Supply Mgr.	40	8	22,500	MLGW	MLGW	22,500
38)	Marketing/Supply Secy	42	6	6,750	75	0	6,825

Note: Phase II Estimated at 48 months

PHASE II

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RECRUITING AND PAYROLL COST ESTIMATE

	<u>POSITION</u>	<u>HIRE DATE MO. AFTER PHASE II</u>	<u>MONTHS PHASE II PAYROLL</u>	<u>DIRECT PAYROLL + % O.H.</u>	<u>RECRUITING COST</u>	<u>RELOCATION COST</u>	<u>TOTAL COST PHASE II</u>
39)	Accounting/EDP Mgr.	44	4	\$ 12,150	MLGW	MLGW	\$ 12,150
40)	Accounting/EDP Secy	46	2	2,250	75	0	2,325
41)	Clerks (4)	47	1	4,500	200	0	4,700
42)	Systems Analyst	44	4	11,250	4,000	4,000	19,250
43)	Data Entry Clerk (2)	46	2	4,500	500	0	5,000
44)	Employee Relations Mgr.	30	18	50,625	6,000	4,000	60,625
45)	Empl. Relations Secy/Clerk	32	16	19,800	50	0	19,850
46)	Personnel Specialist	34	14	23,625	1,000	0	24,625
47)	Switchboard/Recep.	42	6	6,750	100	0	6,850
48)	Messenger/Mail	46	2	2,025	50	0	2,075
49)	Public Relations Mgr.	40	8	20,700	MLGW	MLGW	20,700
50)	P.R. Secretary	42	6	6,750	75	0	6,825

Note: Phase II Estimated at 48 months

PHASE IIRECRUITING AND PAYROLL COST ESTIMATE

<u>POSITION</u>	<u>HIRE DATE MO. AFTER PHASE II</u>	<u>MONTHS PHASE II PAYROLL</u>	<u>DIRECT PAYROLL + % O.H.</u>	<u>RECRUITING COST</u>	<u>RELOCATION COST</u>	<u>TOTAL COST PHASE II</u>
51) Safety/Health Mgr.	30	18	\$ 50,625	\$ 5,000	\$ 4,000	\$ 59,625
52) Industrial Nurse	47	1	1,688	200	0	1,888
53) P/T Doctor	48	0	-	500	0	500
			<hr/>	<hr/>	<hr/>	<hr/>
	TOTALS		\$3,344,643	\$163,300	\$109,000	\$3,616,943

Note: Phase II Estimated at 48 months

	<u>HAS</u>	<u>ISP</u>	<u>PIO</u>	<u>OS</u>	<u>STE</u>	<u>COS</u>	<u>FIM</u>			
<u>POSITION</u>	<u>TRIPS TO LIVINGSTON</u>	<u>TRAVEL COST</u>	<u>RESIDENCE COST IN LIVINGSTON</u>	<u>TRIPS TO CHICAGO</u>	<u>TRAVEL COST</u>	<u>RESIDENCE COST IN CHICAGO</u>	<u>TRIPS ELSEWHERE</u>	<u>AVG. TRAVEL COST</u>	<u>AVERAGE RESIDENCE COST</u>	<u>TOTAL COST</u>
1) Plant Mgr.	25	281	190	8	170	200	14	200	200	20,335
3) Opns. Dir.	12	281	190	10	170	200	12	200	200	14,152
5) Opns. Mgr.	10	281	190	15	170	200	10	200	200	14,260
6) Opns. Supv. (4)	2	281	300	3	170	300	5	175	250	4,697
7) Asst. Opns. Supv. (5)	-	-	-	2	170	300	2	175	300	1,890
10) Lab Mgr.	1	281	190	4	170	250	6	200	200	4,500
15) Process Engr. Mgr.	5	281	300	4	170	250	5	200	200	6,585
16) Process Eng. (4)	3	281	300	2	170	250	4	200	200	4,183
19) Maint. Dir.	1	281	190	2	170	200	4	200	200	2,011
21) Proj. Eng. Mgr.	2	281	190	2	170	200	5	200	200	3,682
22) Proj. Engrs. (4)	2	281	300	2	170	300	4	200	200	3,702
25) Prev. Maint. Sched/Control Supv.	1	281	300	2	170	250	3	175	200	2,546
28) Maint. Mgr.	2	281	190	3	170	200	5	175	200	3,927
37) Marketing/ Supply Mgr.	-	-	-	-	-	-	10	250	300	5,500

*These costs exclusive of T&S costs required for training purposes.

TRAINING PLAN AND COSTS

Estimate for Demonstration Plant

<u>FUNCTION</u>	<u>POSITION</u>	<u>NUMBER</u>	<u>COURSES/TRAINING</u>		<u>DIRECT COST ESTIMATE (1979 \$)</u>		
			<u>PROCESS RELATED/LOC/TIME (DAYS)</u>	<u>SPECIALTY/LOC/TIME (DAYS)</u>	<u>(TIME WKS) SAL/WAGE</u>	<u>PAYROLL BURDEN</u>	<u>TRAVEL AND LIVING EXP.</u>
Overall Mgt.	Plant Mgr.	1	a) Basic-Intense/FWEC/3 das.	g) DRC Review/MEM/1 da.	(5)	35%	
			b) Lab Testing/IGT/1 da.	h) MLCW Review/MEM/1 da.			
			c) Visits to other Coal Gas Plants/ ?/2 das. ea.	d) Maintenance/MEM/1 da.			
			1) U.S.	e) Contract - Gov't Req./ MEM/2 das.	\$4,808	\$1,683	\$ 5,000
			ii) Europe	f) Labor Relations, Personnel & Safety/MEM/1 da.			
			iii) S. Africa				
			iv) England				
			v) 3 wks. total				
						Total	\$11,491
Opns. Mgt.	Dir., Opns.	1	a) Basic-Intense/FWEC/5 das.	d) Maintenance/MEM/2 das.	(6)	35%	
			b) Lab Testing/IGT/3 das.	e) Contract-Gov't Req./MEM/ 2 das.			
			c) Visits/?/2 das. ea.	f) Labor Relations, Personnel & Safety			
			1) U.S.	g) Gas Supply/MEM/1 da.	\$4,615	\$1,615	\$ 4,800
			ii) Europe				
			iii) S. Africa				
			iv) England				
			v) 3 wks. total				
						Total	\$11,030
Quality Con- trol	Chief Chemist Lab Mgr.	1	a) Basic-Intense/FWEC/3 das.	g) Safety/MEM/1 da.	(4)	35%	
			b) Lab Testing/IGT/5 das.	c) Labor Relations, Personnel & Safety/MEM/1 da.	\$1,923	\$ 673	\$ 1,500
			f) Visits/?/2 das. ea.	d) Supervision/MEM/3 das.			
			1) U.S.	e) Maintenance/MEM/2 das.			
			ii) 1 wk.				
						Total	\$ 4,096
Opns. Supv.	Opns. Mgr.	1	a) Basic-Intense/FWEC/5 das.	b) Labor Relations & Personnel/ MEM/1 da.	(3-1/2)	35%	
			c) Visits/?/2 ea.	g) Lab Testing/MEM/2 da.			
			1) U.S.	d) Maintenance/MEM/2 da.	\$2,221	\$ 777	\$ 1,200
			ii) 1 wk.	e) Gas Supply/MEM/1 da			
				f) Safety/MEM/1 da.			
						Total	\$ 4,198

TRAINING PLAN AND COSTS

-2-

Estimate for Demonstration Plant

<u>COURSES/TRAINING</u>					<u>DIRECT COST ESTIMATE (1979 \$)</u>		
<u>FUNCTION</u>	<u>POSITION</u>	<u>NUMBER</u>	<u>PROCESS RELATED/LOC/TIME (DAYS)</u>	<u>SPECIALTY/LOC/TIME (DAYS)</u>	<u>(TIME WKS) SAL/WAGE</u>	<u>PAYROLL BURDEN</u>	<u>TRAVEL AND LIVING EXP.</u>
Opns. Supv.	Workforce Supervision	9	a) Overview/MEM/5 das.	b) Labor Relations & Personnel/ MEM/1 da.	(3 ea.)	35%	
			h) Visit to Pilot Plant/IGT/2 das.	c) Maintenance/MEM/1 da.	\$13,558	\$4,745	\$ 3,000
				d) Supervision/MEM/3 das.			
				e) Safety/MEM/1 da.			
				f) Reports, Control/MEM/1 da.			
				g) Lab Testing/MEM/2 das.			
						Total	\$21,303
Process Specialists	Process Engr. Mgr.	1	a) Basic-Intense/FWEC/5 das.	f) Gas Supply/MEM/1 da.	(3-1/2)	35%	\$ 1,000
			b) Visits/?/2 das. ea.	c) Personnel/MEM/1/2 da.			
			1) U.S.	d) Design, Construction Review/ 5 das./MEM	\$ 2,356	\$ 825	
			ii) 1 week	e) Maintenance/MEM/1 da.			
						Total	\$ 4,181
Process Specialists	Process Engineers	4	a) Basic-Intense/FWEC/5 das.	c) Design, Construction Review/ MEM/5 das.	(3-1/2 ea) \$ 7,067	35%	\$ 1,000 ea
			b) Area of Specialization/?/5 das.	d) Maintenance/MEM/1 da.		\$2,473	Tot. \$ 4,000
				e) Gas Supply/MEM/1 da.			
						Total	\$13,540
Maint. & Tech. Svcs.	Dir., Maint. Tech. Svcs.	1	a) Basic-Intense/FWEC/3 das.	c) Personnel & Labor Rel. & Safety/MEM/1 da.	(6)	35%	
			b) Visits/?/2 das. ea.	d) Gas Supply/MEM/1 da.			
			1) U.S. 1 wk.	e) DRC Maint. Review/MEM/ 5 das.	\$ 4,269	\$1,494	\$ 4,000
			ii) Europe	f) Design, Construction Review/ MEM/5 das.			
			iii) S. Africa				
			iv) England				
			v) 3 wks. total			Total	\$ 9,763

TRAINING PLAN AND COSTS

-3-

Estimate for Demonstration Plant

				COURSES/TRAINING		DIRECT COST ESTIMATE (1979 \$)		
FUNCTION	POSITION	NUMBER	PROCESS RELATED/LOC/TIME (DAYS)	SPECIALTY/LOC/TIME (DAYS)	(TIME WKS) SAL/WAGE	PAYROLL BURDEN	TRAVEL AND LIVING EXP.	
Maint/Plan- ning/Sched/Con- trol	Supervisor Planners	1	a) Overview/MEM/3 das.	b) DRC Maint. Review/MEM/2 das.	(3 ea)	35%	-	
			c) Maint. Reports/Control/ MEM/5 das.	\$3,635	\$1,272			
			d) Design, Const. Review/ MEM/5 das.					
		Total			\$ 4,907			
Maint. Supv.	Maint. Mgr.	1	a) Overview/MEM/3 das.	b) DRC Maint. Review/MEM/1 da.	(3 ea)	35%	-	
	Maint. Fore- men	5		c) Personnel, Labor Rel/ MEM/1 da.				
			d) Reports/Control, Planning/ MEM/1 da.	\$8,942	\$3,130			
			e) Safety/MEM/1 da.					
			f) Supervision/MEM/3 das					
			g) Materials, Structures/ MEM/1 da.					
			h) Rotating EQ/MEM/2 das.					
			i) Instrumentation/MEM/2 das.					
			j) Shop, Warehouse/MEM/1/2 da.					
		Total			\$12,072			
Proj. Eng.	Proj. Eng. Mgr.	1	a) Overview/MEM/3 das.	b) Personnel/MEM/1/2 da.	(2-1/2 ea)	35%	Tot.\$ 1,300	
	Proj. Engineers	4	e) Visit to Pilot Plant/ IGT/2 das.	c) Work Orders, Planning, Reports, Control/MEM/ 3 das.	\$6,538	\$2,288		
			d) Design, Construction Re- view/MEM/5 das.					
		Total			\$10,126			
Purch.	Agent	1	a) Overview/MEM/1 da.	d) Maintenance/MEM/1 da.	(1-1/2)	35%	-	
				b) Work with DRC Agent/ MEM/5 das.	\$ 663	\$ 232		
				c) Personnel & Labor Rel./ MEM/1 da.				
				Total			\$ 895	

10-1-79

TRAINING PLAN AND COSTS

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Estimate for Demonstration Plant

<u>COURSES/TRAINING</u>					<u>DIRECT COST ESTIMATE (1979 \$)</u>		
<u>FUNCTION</u>	<u>POSITION</u>	<u>NUMBER</u>	<u>PROCESS RELATED/LOC/TIME (DAYS)</u>	<u>SPECIALTY/LOC/TIME (DAYS)</u>	<u>(TIME WKS) SAL/WAGE</u>	<u>PAYROLL BURDEN</u>	<u>TRAVEL AND LIVING EXP.</u>
Supply/Mktg.	Mktg/Supply Mgr.	1	a) Overview/MEM/1 da.	b) Personnel/MEM/1/2 da.	(3/4)		-
				c) New Business Overview/ MEM/1 da.	\$ 361	\$ 126	
				d) Gas Supply/MEM/1 da.			
						TOTAL	\$ 487
Acctg/EDP Mgt.	Dir., Acctg/ EDP	1	a) Overview/MEM/1 da.	b) Review Acctg/EDP/at DRC/ 2 das.	(1)	35%	-
				c) Review Acctg./EDP/at MLGW/ 2 das.	\$ 519	\$ 182	
				d) Personnel/MEM/1/2 da.			
						Total	\$ 701
Systems Analysis	Systems Analyst	1	a) Overview/MEM/3 das.	b) Review EDP/DRC/2 das.	(2)	35%	-
				c) Review EDP/MLGW/2 das.			
				d) Maint./MEM/1 da.	\$ 962	\$ 337	
				e) Acctg./MEM/1 da.			
				f) Purchasing/MEM/1/2 da.			
						Total	\$ 1,299

TRAINING PLAN AND COSTS

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Estimate for Demonstration Plant

<u>FUNCTION</u>	<u>POSITION</u>	<u>NUMBER</u>	<u>COURSES/TRAINING</u>		<u>DIRECT COST ESTIMATE (1979 \$)</u>		
			<u>PROCESS RELATED/LOC/TIME (DAYS)</u>	<u>SPECIALTY/LOC/TIME (DAYS)</u>	<u>(TIME WKS) SAL/WAGE</u>	<u>PAYROLL BURDEN</u>	<u>TRAVEL AND LIVING EXP.</u>
Public Relations	PR Mgr.	1	a) Overview/MEM/3 das.	b) DRC Operation/MEM/2 das.	(2)	35%	-
				c) MLCW Operation/MEM/2 das.			
				d) Personnel & Labor Rel./MEM/1 da.	\$ 885	\$ 310	
				e) Safety/MEM/1/2 da.			
				f) Contract- Gov't Req./MEM/1 da.			
						Total	\$ 1,195
Employee Relations	Dir., Emp. Relations	1	a) Overview/MEM/1 da.	b) DRC Operation/MEM/1 da.	(1)	35%	-
				c) MLCW Operation/MEM/2 das.	\$ 481	\$ 168	
				d) Maintenance/MEM/1 da.			
						Total	\$ 649
Safety/Health	Safety/Health Mgr.	1	a) Overview/MEM/3 das.	b) Labor Relations & Personnel/MEM/1 da.	(3)	35%	\$ 700
			d) Visits/?/2 das. ea.	c) Maint./MEM/1 da.	\$1,442	\$ 505	
			i) U.S.	e) DRC Operation/MEM/5 das.			
			ii) 1 week				
						Total	\$ 2,647
Personnel	Pers. Services Mgr.	1	a) Overview/MEM/1 da.	b) DRC Operation/MEM/1 da.	(1)	35%	-
				c) MLCW Operation/MEM/2 das.			
				d) Labor Relations/MEM/2 das.	\$ 288	\$ 101	
						Total	\$ 389

TRAINING PLAN AND COSTS

-6-

Estimate for Demonstration Plant

<u>FUNCTION</u>	<u>POSITION</u>	<u>NUMBER</u>	<u>COURSES/TRAINING</u>		<u>DIRECT COST ESTIMATE (1979 \$)</u>		
			<u>PROCESS RELATED/LOC/TIME (DAYS)</u>	<u>SPECIALTY/LOC/TIME (DAYS)</u>	<u>(TIME WKS) SAL/WAGE</u>	<u>PAYROLL BURDEN</u>	<u>TRAVEL AND LIVING EXP.</u>
Maintenance	Craftsmen, Helpers, Labor	58 (est)	a) Overview/MEM/3 das.	c) Maintenance/MEM/3 das.	80 hrs.	30%	-
			b) Basic Plant Familiarization/ MEM/2 das.	d) Personnel, etc.,/MEM/ 1 da. e) Safety/MEM/1 da.	9.00/hr. \$41,760	\$12,528	
						Total	\$54,288
Operations	Operators, Boardmen	105 (est)	a) Overview/MEM/3 das.	e) Maintenance/MEM/1 da.	304 hrs.	30%	100(175)+100
			b) Basic Plant Familiarization/ MEM/2 das.	f) Personnel, etc.,/MEM/ 1 da.	9.50/hr		(250)(4) \$117,500
			c) Unit Training/Offsite/4 wks. d) Unit Dry Runs/MEM/2 wks.	g) Safety/MEM/1 da.	\$303,240	\$90,972	
						Total	\$511,712

Sub-Total-Wages/Salaries - \$410,533
 - Payroll Burden - 126,436
 - Travel & Living - 144,000

Sub-Total-Direct Costs \$680,969

Sub-Total - Course Materials
 Preparation, \$318,000
 Instruction Costs

GRAND TOTAL \$998,969

COURSE LISTING, CONTENT, PREPARATION

Preliminary Cost Estimates

<u>ITEM</u>	<u>COURSE TITLE</u>	<u>COURSE DESCRIPTION</u>	<u>PREPARED BY</u>	<u>PREPARATION MATERIALS, INSTRUCTION (1979 \$)</u>
1 a	Basic Process	Intense Course for Engineers/Supervisors	IGT/FWEC	\$ 30,000
b	Process Overview	Overview for Technically Oriented (Maint. Foremen)		
2	Lab Testing	Concepts and Unique Tests for Coal, Gases	IGT	\$ 5,000
3	Contract-Gov't Requirements	Thorough Review of Operating Contract and Data Required (Mgt & Process Dept.)	DRC	\$ 2,000
4	Labor Relations, Personnel, Safety	Review of Labor Contract(?), Personnel Policies, Safety Program	DRC, Coal Gas Employee Re- lations Director	\$ 2,000
5	Maintenance	Concepts, Work Orders, Scheduling, Reporting, etc.	DRC; Coal Gas Maint/Svcs. Dir.	\$ 10,000
6	Supervision	Basics of Supervision	Outside Company	\$ 10,000
7	Safety/Health	One Day Review of Safety Program & Health Programs	Coal Gas Safety/ Health Dir.	\$ 2,000
8	Reports, Control	Description of Management Controls-Why-How To, Etc. (Management Personnel)	Acctg/EDP	\$ 5,000
9	Lab Testing	Review of Tests, Why Run, When Run, Effect on Plant	Coal Gas Chief Chemist & Lab Mgr.	\$ 6,000
10	Design, Construction Review	Thorough Review of Basic Design, Equipment, Materials, Etc.	FWEC	\$ 20,000
11	Process Speciali- zation	Process Overviews for Specialized or Licensed Processes for Engrs/Supv.	Major Licensees	\$ 20,000
12	Materials, Structures	Overview for Supervisors and Engineers	FWEC, Coal Gas Proj. Engr.	\$ 5,000
13	Rotating EQ	Overview for Supervisors and Engineers	FWEC/Manufacturers, Coal Gas Proj. Engr.	\$ 5,000
14	Instrumentation	Overview for Supervisors and Engineers	FWEC/Manufacturers Coal Gas Proj. Engr.	\$ 5,000
15	Shop & Warehouse	Overview for Supervisors and Project Dept.	Coal Gas Purch. Mgr.	\$ 2,000
16	Work Orders, Plan- ning, Reports, Control	Overview of Maintenance Management	Dir. Maint/Svcs, Planning Supv.	\$ 2,000

COURSE LISTING, CONTENT, PREPARATIONPreliminary Cost Estimates

<u>ITEM</u>	<u>COURSE TITLE</u>	<u>COURSE DESCRIPTION</u>	<u>PREPARED BY</u>	<u>PREPARATION MATERIALS, INSTRUCTION (1979 \$)</u>
17	Review Acctg. Review EDP	Overview of Systems in Use	Acctg/EDP Supervisor	\$ 2,000
18	DRC Operation MLGW Operation	Overview of Management, Policies, Systems, etc.	DRC/MLGW	\$ 3,000
19	Basic Plant Familiarization	Tours of Plant to EQ Level	Coal Gas Operations Dept.	\$ 2,000
20	Fire Training	Review of EQ, Methods, etc., Actual Practice	Coal Gas Safety Director	\$ 30,000
21	Gasification Unit Training	Detailed Review and Shift Work at Pilot Plant	IGT	\$ 150,000
				<hr/> <hr/> \$ 318,000

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO	NO. OF PAGES
NAME OF OFFEROR Foster Wheeler Energy Corporation		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase II Final Design Procurement & Construction (excluding Construction & Supervision)			
HOME OFFICE ADDRESS 110 South Orange Avenue Livingston, New Jersey 07039					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED Process Plants Division, Livingston, N.J.		TOTAL AMOUNT OF PROPOSAL \$		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS Nov. 9, 1979					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST ¹	REFERENCE ²
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS					
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD ³ (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	
Technical Labor (Oct. 1979 Rates)		900,200	\$13.54	12192892	Page 3
TOTAL DIRECT LABOR				12192892	
4. LABOR OVERHEAD (Specify Department or Cost Center) ³		O.H. RATE	X BASE =	EST COST (\$)	
Department Overhead (1978 Audit)		56.6%	12192892	6902896	Page 3
TOTAL LABOR OVERHEAD				6902896	
5. SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST (\$)		
a. TRANSPORTATION and Living			955000		Page 3
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL				955000	
8. CONSULTANTS (Identify—purpose—rate)			EST COST (\$)		
Environmental Support			2136957		Page 3
Technical Consultants			250495		Page 3
TOTAL CONSULTANTS				2387452	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)				1069400	Page 3
TOTAL DIRECT COST AND OVERHEAD				23507640	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 39.8 % of cost element Nos. 3) ³				4850662	Page 3
12. ROYALTIES ⁴ Estimated Escalation at 7% per year				4699967	Page 3
TOTAL ESTIMATED COST				33058269	
14. FEE OR PROFIT per DOE Procedures - Weighted Guidelines				4344850	Page 4
TOTAL ESTIMATED COST AND FEE OR PROFIT				37403119	

MEMPHIS LIGHT, GAS AND WATER DIVISION/DOE
 PHASE II HOME OFFICE SERVICES SUMMARY
 DEMONSTRATION PLANT FINAL DESIGN, PROCUREMENT AND CONSTRUCTION
 SUMMARY OF ESTIMATED COSTS (October 1979 Rates and 1978 Audited Overheads)

<u>Task</u>	<u>Description</u>	<u>Technical Manhours</u>	<u>Base Salary</u>	<u>Department Overhead</u>	<u>Travel & Living Exp.</u>	<u>Consultants</u>	<u>Other Direct Costs</u>	<u>G & A Overhead</u>	<u>Total Current Day Est. Cost</u>	<u>Est. Future Escal.</u>	<u>Total Estimated Cost</u>	<u>Eng. Fee or Profit</u>	<u>Total</u>
I	(Deleted)	-											
II	Engineering, Design and Procurement	769,000	\$10,195,530	\$5,521,640	\$630,000	-	\$ 900,000	\$4,055,900	\$21,303,070				
III	Bid Review - Award Mat'l. & Subc.	4,800	62,686	42,083	10,000	-	4,100	24,951	143,820				
IV	Plant Construction	5,500	74,285	36,330	47,000	-	5,600	29,565	192,780				
V	Checkout & Acceptance	4,400	61,546	42,429	9,000	-	3,700	24,495	141,170				
VI	Plant - Operations and Training Manuals	27,000	378,320	251,770	-	-	46,400	150,570	827,060				
VII	(Deleted)	-											
VIII	Technical Support	8,300	144,175	121,135	25,000	2,387,452	7,000	57,190	2,741,952				
IX	Commercial Plant Reassessment	6,200	90,350	59,547	9,000	-	5,600	35,963	200,460				
X	Program Management	75,000	1,186,000	827,962	225,000	-	97,000	472,028	2,807,990				
TOTALS		\$900,200	\$12,192,892 (\$13.54 Avg. Rate)	\$6,902,896 (56.68 Average)	\$955,000	2,387,452	\$1,069,400 (7) (39.8% Average)	\$4,850,662	28,358,302	4,699,967	33,058,269	\$4,344,850	37,403,119

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Foster Wheeler Energy Corporation		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase II Task IV Construction Management of Plant Construction			
HOME OFFICE ADDRESS 110 South Orange Avenue Livingston, New Jersey 07039					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED Job Site		TOTAL AMOUNT OF PROPOSAL \$		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS Nov. 9, 1979					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS					
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD ³ (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED Months	RATE/ MO.	EST COST (\$)	
Construction Management (1979 Rates)		2404	(2018)	4850930	
TOTAL DIRECT LABOR				4850930	
4. LABOR OVERHEAD (Specify Department or Cost Center) ⁴		O.H. RATE	X BASE =	EST COST (\$)	
Department Overhead (1978 Audit)		34.8%	4850930	1688120	
TOTAL LABOR OVERHEAD				1688120	
5. SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST (\$)		
a. TRANSPORTATION In & Out Expenses 92 men + family			414000		
b. PER DIEM OR SUBSISTENCE			1069780		
TOTAL TRAVEL			1483780		
8. CONSULTANTS (Identify—purpose—rate)			EST COST (\$)		
TOTAL CONSULTANTS					
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
TOTAL DIRECT COST AND OVERHEAD				8022830	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 39.8 % of cost element Nos. 3) ⁵				1930670	
12. Estimated Escalation at 7% per year				(2488500)	
TOTAL ESTIMATED COST				12442000	
14. FEE OR PROFIT Per DOE Procedures - Weighted Guidelines				1755000	
TOTAL ESTIMATED COST AND FEE OR PROFIT				14197000	

CONSTRUCTION MANAGEMENT
STAFFING PLAN
(1979 Dollars)

WENT OVER
W/SWEL
Dick KeiCKER

<u>Supervision</u>	<u>Base Rate</u>	<u>Months</u>	<u>Salary</u>
Construction Director / <i>my</i>	3500	36	126,000 - 42K
Supt. of Area Construction	3200	33	105,600
→ Supt. of Sub-Cont. Construction	-2400-	36	86,400
Supt. of Engineering Services	2250	33	74,250
Financial Manager	2000	36	72,000
Q.A., Q.C. Manager	2300	35	80,500
Sub-Contract Manager	-2200-	36	79,200
Cost Analyst Manager	2200	36	79,200
→ Plan-Schedule Manager	→2100←	34	71,400
Supt. of Materials	2000	34	58,000
Chief Warehouseman	1900	32	60,800
Chief Constr. Engineer	2100	34	71,400
Accts. Receivable Manager	1850	34	62,900
Accts. Payable Manager	1850	34	62,900
Sub-Contr. Billing Manager	1850	35	64,750
Field Buyer	2000	33	66,000
Field Buyer	1900	24	45,600
Field Buyer	1900	20	38,000
Field Buyer	1900	20	38,000
Field Auditor	1850	34	44,400
Field Auditor	1850	33	61,050
Field Auditor	1800	25	45,000
Field Auditor	1800	23	41,400
Civil Inspector	2000	25	50,000
Civil Inspector	2000	20	40,000
Millwright Inspector	2100	21	44,100
Millwright Inspector	2000	16	32,000
Rigging Supervisor	2200	15	33,000
Heater Erector - Inspector	2200	14	30,800
Security/Public Relations	2200	33	72,600
Safety Director	2000	34	68,000
Industrial Relations Mgr.	2200	32	70,400

42.
31126.
12

<u>Supervision</u>	<u>Base Rate</u>	<u>Months</u>	<u>Salary</u>
<u>Area 1</u>			
Area Coordinator	2300	19	43,700
Sr. Constr. Engineer-	2000	19	38,000
Area Field Engineer	1900	18	34,200
Area Field Engineer	1800	17	30,600
Sub-Contract Admin.	2000	19	38,000
Quantity Surveyor	1900	19	36,100
Material Controller	1800	19	34,200
\Area Cost Analyst	1800	19	34,200
\Area Planner	1800	17	30,600
Piping Inspector	2200	14	30,800
Electrical Inspector	2200	14	30,800
Instrumentation Inspector	2275	11	25,025
Welding Inspector	2200	14	30,800
 <u>Area 2</u>			
Area Coordinator	2200	25	55,000
Sr. Constr. Engineer	2000	26	52,000
Area Field Engineer	1900	25	47,500
Area Field Engineer	1800	23	41,400
Sub-Contract Admin.	2000	25	50,000
Quantity Surveyor	1900	23	43,700
Material Controller	1800	25	45,000
\Area Cost Analyst	1800	25	45,000
\Area Planner	1800	23	41,400
Piping Inspector	2200	19	41,800
Electrical Inspector	2200	19	41,800
Instrumentation Inspector	2200	17	37,400
Welding Inspector	2200	19	41,800

<u>Supervision</u>	<u>Base Rate</u>	<u>Months</u>	<u>Salary</u>
<u>Area 3</u>			
Area Coordinator	2300	34	78,200
Sr. Constr. Engineer	2100	34	71,400
Area Field Engineer	1900	33	62,700
Area Field Engineer	1800	31	55,800
Area Field Engineer	1800	22	39,600
Area Field Engineer	1700	15	25,500
Quantity Surveyor	1900	28	53,200
Quantity Surveyor	1800	19	34,200
Material Controller	1800	25	45,000
\Area Cost Analyst	1800	32	57,600
\Area Cost Analyst	1750	25	43,750
\Area Cost Analyst	1700	17	28,900
\Area Planner	1800	31	55,800
\Area Planner	1700	16	27,200
Piping Inspector	2200	21	46,200
Electrical Inspector	2200	26	57,200
Instrumentation Inspector	2200	21	42,200
Welding Inspector	2200	23	50,600
Welding Inspector	2200	16	35,200
Sub-Contract Admin.	2000	34	68,000

<u>Supervision</u>	<u>Base Rate</u>	<u>Months</u>	<u>Salary</u>
<u>Area 4</u>			
Area Coordinator	2200	35	77,000
Sr. Constr. Engineer	2000	32	64,000
Area Field Engineer	1900	32	60,800
Area Field Engineer	1800	27	48,600
Area Field Engineer	1800	23	41,400
Area Field Engineer	1700	19	32,300
Quantity Surveyor	1800	28	50,400
Material Surveyor	1800	26	46,800
\ Area Cost Analyst	1800	33	59,400
\ Area Cost Analyst	1700	27	45,900
\ Area Planner	1800	27	48,600
Sub-Contract Admin.	2000	33	66,000
Piping Inspector	2200	19	41,800
Electrical Inspector	2200	19	41,800

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 39 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Foster Wheeler Energy Corporation		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase II Final Design Procurement & Construction (excluding Construction & Supervision)			
HOME OFFICE ADDRESS 110 South Orange Avenue Livingston, New Jersey 07039		DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED Process Plants Division, Livingston, N.J.		TOTAL AMOUNT OF PROPOSAL	GOV'T SOLICITATION NO.
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A) Plant Cost			EST COST (\$)	TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS			103850900		
b. SUBCONTRACTED ITEMS			108482550		
c. OTHER—(1) Costs			74682370		
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				\$287015820	
2. MATERIAL OVERHEAD ³ (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/ HOUR	EST COST (\$)	
TOTAL DIRECT LABOR					
4. LABOR OVERHEAD (Specify Department or Cost Center) ³		O.H. RATE	X BASE =	EST COST (\$)	
TOTAL LABOR OVERHEAD					
5. SPECIAL TESTING (Including field work at Government installations)				EST COST (\$)	
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)				EST COST (\$)	
a. TRANSPORTATION					
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL					
8. CONSULTANTS (Identify—purpose—rate)				EST COST (\$)	
TOTAL CONSULTANTS					
9. OTHER DIRECT COSTS (Itemize on Exhibit A) Escalation @ 7%					66536030
TOTAL DIRECT COST AND OVERHEAD					
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate % of cost element Nos.) ³					
12. ROYALTIES ⁴					
TOTAL ESTIMATED COST					
14. FEE OR PROFIT					
TOTAL ESTIMATED COST AND FEE OR PROFIT					\$353551850

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO	NO. OF PAGES
NAME OF OFFEROR ENERGY IMPACT ASSOCIATES		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase II Environmental Support Tasks for the Memphis Light, Gas and Water Division Industrial Fuel Gas Demonstration Plant (N-218)			
HOME OFFICE ADDRESS P.O. Box 1899 Pittsburgh, PA 15230		DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED		TOTAL AMOUNT OF PROPOSAL \$ 2,136,957	GOVT SOLICITATION NO.
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST	REFERENCE
a. PURCHASED PARTS			54,810		
b. SUBCONTRACTED ITEMS					
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				54,810	
2. MATERIAL OVERHEAD (Rate %N\$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	
Senior Staff		3206	19.94	63,808	
Manager/Fellow Scientist		7598	14.49	110,095	
Senior Engineer/Scientist		5607	10.70	59,995	
Engineer/Scientist		5425	9.02	48,934	
Associate Engineer/Scientist		3141	7.32	22,992	
Technical Editor		1088	8.57	9,324	
Senior Technician		1662	7.50	12,465	
Draftsman		843	6.06	5,109	
TOTAL DIRECT LABOR				332,722	
4. LABOR OVERHEAD (Specify Department or Cost Center)		O.H. RATE	X BASE	EST COST (\$)	
		158.8%	332,722	528,363	
TOTAL LABOR OVERHEAD				528,363	
5. SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
Lab Testing & Sample Analysis (Construction Monitoring)			80,000		
Wastewater & Leaching Analysis (IGT Pilot Plant)			30,000		
TOTAL SPECIAL TESTING				110,000	
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
Computer				10,000	
7. TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST (\$)		
a. TRANSPORTATION			106,620		
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL				106,620	
8. CONSULTANTS (Identify—purpose—rate)			EST COST (\$)		
Legal & Technical Environmental Specialists (Permitting)			35,000		
Memphis Area Consultants (MSU, RAMCON, etc.)			125,000		
Wastewater Treatability Specialists			20,000		
TOTAL CONSULTANTS				180,000	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
TOTAL DIRECT COST AND OVERHEAD				1,322,515	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 27.9% of cost element Nos.)				368,982	
12. ROYALTIES—Escalation @ 7% per year over 5 years				287,167	
TOTAL ESTIMATED COST				1,978,664	
14. FEE OR PROFIT 8%				158,293	
TOTAL ESTIMATED COST AND FEE OR PROFIT				2,136,957	

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

SIGNATURE

H. K. Meyer

DATE OF SUBMISSION

Dec. 14, 1979

EXHIBIT A—SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse)

[illegible]

☒ YES ☐ NO (If yes, identify below.)

TELEPHONE NUMBER/EXTENSION

412-644-3461

☒ YES ☐ NO (If yes, identify on reverse or separate page) Air Quality Monitoring Equipment

☒ YES ☐ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☒ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

☐ YES ☒ NO (If yes, identify.):

☒ YES ☐ NO (If no, explain on reverse or separate page)

OPTIONAL FORM 60 (10-71)

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

TYPED NAME AND TITLE George E. Kenoyer Vice President		SIGNATURE
NAME OF FIRM Energy Impact Associates		DATE OF SUBMISSION Dec. 14, 1979
EXHIBIT A—SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse)		
COST EL NO.	ITEM DESCRIPTION (See footnote 5)	EST COST (\$)
1a	Paper, Filters, Equipment Maintenance Materials, Calibration Materials, Sampling Containers, Treatability Analysis Equipment, Field Analytical Supplies, Sample Bottles, Nets, Traps, etc.	54,810
7	75 trips to Livingston, NJ - 19,500 180 trips to Memphis, TN - 57,600 36 trips to Nashville, TN - 10,260 18 trips to Atlanta, GA - 5,490 18 trips to Chicago, IL - 5,130 36 trips to Washington, DC - 8,640	106,620
I. HAS ANY EXECUTIVE OFFICE OF THE UNITED STATES GOVERNMENT PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS? ☒ YES ☐ NO (If yes, identify below.)		
NAME AND ADDRESS OF REVIEWING OFFICE AND INDIVIDUAL DCAA Ted Craniak		TELEPHONE NUMBER/EXTENSION 412-644-3461
II. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS PROPOSED CONTRACT? ☒ YES ☐ NO (If yes, identify on reverse or separate page) Air Quality Monitoring Equipment		
III. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? ☒ YES ☐ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☒ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS		
IV. DO YOU NOW HOLD ANY CONTRACT (Or, do you have any independently financed (IR&D) projects) FOR THE SAME OR SIMILAR WORK CALLED FOR BY THIS PROPOSED CONTRACT? ☐ YES ☒ NO (If yes, identify.):		
V. DOES THIS COST SUMMARY CONFORM WITH THE COST PRINCIPLES SET FORTH IN AGENCY REGULATIONS? ☒ YES ☐ NO (If no, explain on reverse or separate page)		

MEMPHIS PHASE II

Cost Summary (1000's)

<u>Year</u>	<u>Task</u>				<u>Yearly Total</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>V</u>	
(80)	211,306	175,456	87,402	165,285	632,057
(81)	152,332	99,491	229,925	281,344	755,184
(82)	95,686	--	153,597	--	249,283
(83)	102,388	--	164,354	--	266,742
(84)	79,861	43,330	95,200	--	218,391
Task Total	641,573	318,277	730,478	446,629	2,136,957

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>Total</u>
Task I, II, III		473	250	266	218	1,673K
Task V	165	281	--	--	--	446K

SUMMARY OF PHASE III COSTS

includes Storage System

<u>Organization</u>	Phase III Cost (1979 Dollars)	Escalation		Total "Then Year" Phase III Cost	
		Base Case	7% Basis	Base Case	with 7% Escalation
MLGW	\$17,476,362	690,942	Same	18,167,304	
IGT	3,841,185	1,539,839 <i>in error</i>	1,422,697	5,381,024	5,263,882
DRC	41,857,888	19,190,000	15,106,173	61,047,888	56,964,061
FWEC (inc. EIA)	2,386,955 <i>2673,000</i>	713,048 <i>427,000</i>	713,048	3,100,003	Same
	\$65,562,390	\$22,133,829	\$17,932,860	\$87,696,219	\$83,495,250

Total Phase III Cost = \$71,696,219

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-1.607-3) is required and (ii) substitution for the Optional Form 39 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Memphis Light, Gas & Water Division HOME OFFICE ADDRESS P. O. Box 430 Memphis, TN 38145		SUPPLIES AND/OR SERVICES TO BE FURNISHED INDUSTRIAL FUEL GAS DEMONSTRATION PLANT PROGRAM - PHASE III - OPERATION MARCH 1984 - OCTOBER 1985			
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED		TOTAL AMOUNT OF PROPOSAL \$ 2,167,304		GOVT SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST	REFER- ENCE
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS					
c. OTHER - (1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/HOUR	EST COST (\$)	
See Attached				816,000	
TOTAL DIRECT LABOR				816,000	
4. LABOR OVERHEAD (Specify Department or Cost Center)		O.H. RATE	X BASE =	EST COST (\$)	
		52%	816,000	424,320	
TOTAL LABOR OVERHEAD				424,320	
5. SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charges (Itemize on Exhibit A)					
7. TRAVEL (If direct charges) (Give details on attached schedule)			EST COST (\$)		
a. TRANSPORTATION					
			23,830		
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL				23,830	
8. CONSULTANTS (Identify - purpose - rate)			EST COST (\$)		
Value Analysis Consultant			140,000		
Independent External Auditor			32,000		
TOTAL CONSULTANTS				172,000	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
TOTAL DIRECT COST AND OVERHEAD				1,436,150	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 2.8 % of total direct cost Vol. 10)				40,212	
12. ROYALTIES Escalation @ 7% per year				690,942	
TOTAL ESTIMATED COST				2,167,304	
14. FEE OR PROFIT					
TOTAL ESTIMATED COST AND FEE OR PROFIT				2,167,304	

MLGW INDUSTRIAL FUEL GAS DEMONSTRATION PLANT
ESTIMATE OF COST - PHASE III OPERATIONS
MARCH 1984 - OCTOBER 1985

PERSONNEL	MONTHLY SALARY	NO. OF MONTHS	TOTAL SALARY	OVERHEAD 52%	ESTIMATED COST
Program Manager	\$2,500	20	\$ 50,000	\$ 26,000	\$ 76,000
Engineering Manager	2,350	20	47,000	24,440	71,440
Contract Administrator	2,150	20	43,000	22,360	65,360
Project Engineers (4)	2,250	20	180,000	93,600	273,600
Design Engineers (2)	2,000	20	80,000	41,600	121,600
Process Engineers (2)	2,150	20	86,000	44,720	130,720
Engineers (2)	1,850	20	74,000	38,480	112,480
Procurement Coordinators (2)	1,850	20	74,000	38,480	112,480
Accountants (2)	2,000	20	80,000	41,600	121,600
Draftsman (2)	1,350	20	54,000	28,080	82,080
Clerical (2)	1,200	20	48,000	24,960	72,960
			\$816,000	\$424,320	\$1,240,320

<u>TRAVEL</u>					
DESTINATION	MAN TRIPS	AIR FARE	LIVING EXPENSE	CAR RENTAL	ESTIMATED COSTS
Livingston, NJ (3 days)	30	\$288	\$180	\$75	\$16,290
Pittsburgh, PA (2 days)	10	222	120	60	4,020
Chicago, IL (2 days)	10	172	120	60	3,520
					\$23,830

SUBCONTRACTS

DESCRIPTION	CONSULTANT/ CONTRACTOR	BASIS OF ESTIMATE	ESTIMATED COST
Value Analysis Consultant	Unknown	EE	\$ 140,000
Independent External Auditor	Delotte, Haskins, & Sells	EE	32,000
		G&A @ 2.8%	\$ 172,000
			40,212
		ESCALATION @ 7% PER YR.	\$1,476,362
			690,942
		TOTAL ESTIMATED COSTS	\$2,167,304

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO. 1	NO. OF PAGES 14
NAME OF OFFEROR INSTITUTE OF GAS TECHNOLOGY		SUPPLIES AND/OR SERVICES TO BE FURNISHED INDUSTRIAL FEUL GAS DEMONSTRATION PLANT PROGRAM PHASE III			
HOME OFFICE ADDRESS 3424 SOUTH STATE STREET CHICAGO, ILLINOIS 60616					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED		TOTAL AMOUNT OF PROPOSAL \$ 5,381,024		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS					
1 DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST	REFER- ENCE
a. PURCHASED PARTS			319,248		
b. SUBCONTRACTED ITEMS			770,756		
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				1090,004	REF C
2 MATERIAL OVERHEAD (Rate % X \$ base =)					
3 DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/ HOUR	EST COST (\$)	
DIRECT LABOR AT IGT FACILITY				864,985	
DIRECT LABOR AT DOE FACILITY				1289,286	
SEE LABOR DETAILS					
TOTAL DIRECT LABOR				2154,271	REF A
4 LABOR OVERHEAD (Specify Department or Cost Center)		O.H. RATE	X BASE =	EST COST (\$)	
DIRECT LABOR-IGT FACILITY		99%	864,985	856,335	
TOTAL DIRECT COST-DOE FACILITY		17%	2415,290	410,599	
TOTAL LABOR OVERHEAD				1266,934	REF B
5 SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
TOTAL SPECIAL TESTING					
6 SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7 TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST (\$)		
a. TRANSPORTATION			21,088		
b. PER DIEM OR SUBSISTENCE			24,000		
TOTAL TRAVEL				45,088	REF C
8 CONSULTANTS (Identify—purpose—rate)			EST COST (\$)		
TOTAL CONSULTANTS					
9 OTHER DIRECT COSTS (Itemize on Exhibit A)				36,000	
TOTAL DIRECT COST AND OVERHEAD				4,592,297	
11 GENERAL AND ADMINISTRATIVE EXPENSE (Rate 9.0 % of cost element Nos. 10)				413,307	REF B
12 ROYALTIES					
13			TOTAL ESTIMATED COST	5,005,604	
14 FEE OR PROFIT				375,420	
TOTAL ESTIMATED COST AND FEE OR PROFIT				5,381,024	

PHASE III
Estimated Cost by Tasks

March 1984 thru October 1985

ELEMENTS of COST	Task 1 IGT	Task 2 IGT	Task 3 IGT	DOE	Task 5 IGT	Total Phase III IGT	DOE	Total
	Facility	Facility	Facility		Facility	Facility		
DIRECT LABOR	111475	103285	452404	1289286	197821	864985	1289286	2154271
LABOR OVERHEAD 99%	110360	102252	447880	-	195843	856335	-	856335
MATERIALS & SERVICES				319248		-	319248	319248
SUBCONTRACTED ITEMS				770756		-	770756	770756
TRAVEL					45088	45088	-	45088
ODC-COMPUTER				36000			36000	36000
SUB-TOTAL	221835	205537	900284	2415290	438752	1766408	2415290	4181698
OVERHEAD 17%				410599		-	410599	410599
SUB - TOTAL	221835	205537	900284	2825889	438752	1766408	2825889	4592297
G & A 9%	19965	18498	81026	254330	39488	158977	254330	413307
TOTAL EST. COST	241800	224035	981310	3080219	478240	1925385	3080219	5005604
FEE								375420
TOTAL EST. COST & FEE								5381024

REFERENCE A - Basis for Labor Cost Estimates

A breakdown of labor cost estimate by personnel classification is given in the attached table. The rates given for labor classifications are current IGT average hourly rates for the labor classification shown.

The hourly rates given for full-time employees of IGT are based on 2016 hours per year (2080 hours less 64 hours for eight holidays). For manpower deployment purposes, it is assumed that an individual's productive year is 1920 hours, (2016 less 96 hours for vacation, sick leave, and administrative leave), and a productive man-month is 160 hours.

It is IGT's practice to make general salary adjustments on September 1, coincident with the beginning of its fiscal year. For estimating purposes, it is assumed that a contract would be awarded 90 days after submission of the proposal. In the event that the period of performance would extend beyond September 1, the current labor rates given in the attached table have been escalated by the factor of $.075$ for each 12 month period beyond September 1 to account for anticipated general salary increases.

The following direct paid fringe benefits are included in the average hourly rates given in the labor cost estimate tables:

1. Employer contribution to social security (FICA).
2. IGT contribution to Teachers Insurance and Annuity Association (TIAA) retirement.
3. Blue Cross and Blue Shield Hospitalization provided by IGT.
4. TIAA Major Medical Insurance paid for by IGT.
5. Disability Insurance paid for by IGT.
6. North American Life Insurance Co. life insurance paid for by IGT for non-union employees.
7. TIAA life insurance paid for by IGT for union employees.
8. Unemployment tax paid for by IGT.
9. Dental Insurance paid for by IGT.

The following are items which do not appear in the direct labor cost estimate but are included in the Indirect Expense pools (See Reference B):

1. Vacation
2. Illness
3. Administrative Leave
4. Travel Accident Death and Disability Insurance.

LABOR COST ESTIMATE BREAKDOWN

P 179G11/79A		TASK 3 1												
NAME/RATE		9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	TOTALS
FULL PROFNL	HRS							160	160	160	160	160	160	960
19.56	\$							3129.60	3129.60	3129.60	3129.60	3129.60	3129.60	18777.60
SR PROFNL	HRS							160	160	160	160	160	160	960
28.25	\$							4520.00	4520.00	4520.00	4520.00	4520.00	4520.00	27120.00
TECH SUPV	HRS							160	160	160	160	160	160	960
21.49	\$							3438.40	3438.40	3438.40	3438.40	3438.40	3438.40	20630.40
ENGINEER	HRS							160	160	160	160	160	160	960
16.19	\$							2590.40	2590.40	2590.40	2590.40	2590.40	2590.40	15542.40
TOTALS								640	640	640	640	640	640	3840
								13678.40	13678.40	13678.40	13678.40	13678.40	13678.40	82078.40

P 179G11/79A			TASK 3 1											
NAME/RATE		9/84	10/84	11/84	12/84	1/85	2/85	3/85	4/85	5/85	6/85	7/85	8/85	TOTALS
FULL PROFNL	HRS	160	160											320
21.03	\$	3363.60	3364.80											6728.40
SR PROFNL	HRS	160	160											320
30.36	\$	4857.60	4857.60											9715.20
TECH SUPV	HRS	160	160											320
23.10	\$	3696.00	3696.00											7392.00
ENGINEER	HRS	160	160											320
17.40	\$	2784.00	2784.00											5568.00
TOTALS		640	640											1280
		14702.40	14702.40											29404.80

TOTAL 40JRS 5120
TOTAL COST 111475.20

LABOR COST ESTIMATE BREAKDOWN

P 179611/79A		TASK 3 2												
NAME/RATE		9/84	10/84	11/84	12/84	1/85	2/85	3/85	4/85	5/85	6/85	7/85	8/85	TOTALS
SR PROENL	HRS		160	160	160	160	160	160	160	160	160	160	160	1760
30.36	\$		4857.60	4857.60	4857.60	4857.60	4857.60	4857.60	4857.60	4857.60	4857.60	4857.60	4857.60	53433.60
TECH SUPV	HRS		160	160	160	160	160	160	160	160	160	160	160	1760
23.10	\$		3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	40656.00
TOTALS			320	320	320	320	320	320	320	320	320	320	320	3520
			8553.60	8553.60	8553.60	8553.60	8553.60	8553.60	8553.60	8553.60	8553.60	8553.60	8553.60	94089.60

P 179011/79A		TASK 3 2												
NAME/RATE		9/85	10/85	11/85	12/85	1/86	2/86	3/86	4/86	5/86	6/86	7/86	8/86	TOTALS
SR PROFNL	HRS	160												160
32.64	\$	5222.40												5222.40
TECH SUPV	HRS	160												160
24.83	\$	3972.80												3972.80
TOTALS		320												320
		9195.20												9195.20

TOTAL HOURS 3840
TOTAL COST 103204.80

LABOR COST ESTIMATE BREAKDOWN

P 179611/79A		TASK 3 3												
NAME/RATE		9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	TOTALS
FULL PROFNL	HRS							320	320	320	320	320	320	1920
19.56	\$							6259.20	6259.20	6259.20	6259.20	6259.20	6259.20	37955.20
SR PROFNL	HRS							160	160	160	160	160	160	960
28.25	\$							4520.00	4520.00	4520.00	4520.00	4520.00	4520.00	27120.00
RESEARCH MGR	HRS							320	320	320	320	320	320	1920
26.16	\$							8371.20	8371.20	8371.20	8371.20	8371.20	8371.20	50227.20
ASSOC DIRECT	HRS							80	80	80	80	80	80	480
32.13	\$							2570.40	2570.40	2570.40	2570.40	2570.40	2570.40	15422.40
EDITING	HRS							80	80	80	80	80	80	480
10.95	\$							876.00	876.00	876.00	876.00	876.00	876.00	5256.00
DRAFTING	HRS							160	160	160	160	160	160	960
10.95	\$							1752.00	1752.00	1752.00	1752.00	1752.00	1752.00	10512.00
TECH SUPV	HRS							1120	1120	1120	1120	1120	1120	6720
21.49	\$							24068.80	24068.80	24068.80	24068.80	24068.80	24068.80	144412.80
TECH SUPV	HRS							800	800	800	800	800	800	4800
19.82	\$							15856.00	15856.00	15856.00	15856.00	15856.00	15856.00	95136.00
SR TECH	HRS							800	800	800	800	800	800	4800
15.08	\$							12064.00	12064.00	12064.00	12064.00	12064.00	12064.00	72384.00
TECHNICIAN	HRS							4000	4000	4000	4000	4000	4000	24000
9.67	\$							38680.00	38680.00	38680.00	38680.00	38680.00	38680.00	232080.00
SCIENTIST	HRS							160	160	160	160	160	160	960
13.60	\$							2176.00	2176.00	2176.00	2176.00	2176.00	2176.00	13056.00
ENGINEER	HRS							800	800	800	800	800	800	4800
16.19	\$							12952.00	12952.00	12952.00	12952.00	12952.00	12952.00	77712.00
ASST DIRECT	HRS							80	80	80	80	80	80	480
27.48	\$							2198.40	2198.40	2198.40	2198.40	2198.40	2198.40	13190.40
TOTALS								8880	8880	8880	8880	8880	8880	53280
								132344.00	132344.00	132344.00	132344.00	132344.00	132344.00	794064.00

LABOR COST ESTIMATE BREAKDOWN

P 17VG11/79A		TASK 3 3												
NAME/RATE		9/84	10/84	11/84	12/84	1/85	2/85	3/85	4/85	5/85	6/85	7/85	8/85	TOTALS
FULL PROFNL	MRS	320	320	320	320	320	320	160	160	160	160	160	160	2880
21.03	\$	6729.60	6729.60	6729.60	6729.60	6729.60	6729.60	3364.80	3364.80	3364.80	3364.80	3364.80	3364.80	50556.40
SR PROFNL	MRS	160	160	160	160	160	160							960
30.36	\$	4857.60	4857.60	4857.60	4857.60	4857.60	4857.60							29145.60
RESEARCH MGR	MRS	320	320	320	320	320	320	160	160	160	160	160	160	2880
28.12	\$	8998.40	8998.40	8998.40	8998.40	8998.40	8998.40	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	80985.60
ASSOC DIRECT	MRS	80	80	80	80	80	80							480
34.54	\$	2763.20	2763.20	2763.20	2763.20	2763.20	2763.20							16579.20
EDITING	MRS	80	80	80	80	80	80							480
11.77	\$	941.60	941.60	941.60	941.60	941.60	941.60							5649.60
DRAFTING	MRS	160	160	160	160	160	160							960
11.77	\$	1883.20	1883.20	1883.20	1883.20	1883.20	1883.20							11299.20
TECH SUPV	MRS	1120	1120	1120	1120	1120	1120	160	160	160	160	160	160	7680
23.10	\$	25872.00	25872.00	25872.00	25872.00	25872.00	25872.00	3696.00	3696.00	3696.00	3696.00	3696.00	3696.00	177408.00
TECH SUPT	MRS	800	800	800	800	800	800							4800
21.30	\$	17040.00	17040.00	17040.00	17040.00	17040.00	17040.00							102240.00
SR TECH	MRS	800	800	800	800	800	800							4800
16.21	\$	12960.00	12960.00	12960.00	12960.00	12960.00	12960.00							77808.00
TECHNICIAN	MRS	4000	4000	4000	4000	4000	4000							24000
10.39	\$	41560.00	41560.00	41560.00	41560.00	41560.00	41560.00							249360.00
SCIENTIST	MRS	160	160	160	160	160	160							960
14.61	\$	2337.60	2337.60	2337.60	2337.60	2337.60	2337.60							14025.60
ENGINEER	MRS	800	800	800	800	800	800							4800
17.40	\$	13920.00	13920.00	13920.00	13920.00	13920.00	13920.00							83520.00
ASST DIRECT	MRS	80	80	80	80	80	80							480
29.55	\$	2364.00	2364.00	2364.00	2364.00	2364.00	2364.00							14184.00
TOTALS		8880	8880	8880	8880	8880	8880	480	480	480	480	480	480	56160
		142235.20	142235.20	142235.20	142235.20	142235.20	142235.20	11560.00	11560.00	11560.00	11560.00	11560.00	11560.00	92771.20

LABOR COST ESTIMATE BREAKDOWN

INSTITUTE OF GAS TECHNOLOGY

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P 179011/79A		TASK 3 3											
NAME/RATE	9/85	10/85	11/85	12/85	1/86	2/86	3/86	4/86	5/86	6/86	7/86	8/86	TOTALS
FULL PROFNL HRS	160	160											320
22.61	\$ 3617.60	3617.60											7235.20
RESEARCH MGR HRS	160	160											320
30.23	\$ 4836.80	4836.80											9673.60
TECH SUPV HRS	160	160											320
24.83	\$ 3972.80	3972.80											7945.60
TOTALS	480	480											960
	12427.20	12427.20											24854.40
												TOTAL HOURS	110480
												TOTAL COST	1741689.60

LABOR COST ESTIMATE BREAKDOWN

P 179611/79A		TASK 3 5											
NAME/RATE	9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	TOTALS
RESEARCH MGR HRS 26.16							160	160	160	160	160	160	960
							4185.60	4185.60	4185.60	4185.60	4185.60	4185.60	25113.60
ASSOC DIRECT HRS 32.13							160	160	160	160	160	160	960
							5140.40	5140.80	5140.80	5140.80	5140.80	5140.80	30844.80
TOTALS							320	320	320	320	320	320	1920
							9326.40	9326.40	9326.40	9326.40	9326.40	9326.40	55938.40

P 179611/79A		TASK 3 5											
NAME/RATE	9/84	10/84	11/84	12/84	1/85	2/85	3/85	4/85	5/85	6/85	7/85	8/85	TOTALS
RESEARCH MGR HRS 28.12	160	160	160	160	160	160	160	160	160	160	160	160	1920
	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	4499.20	57998.40
ASSOC DIRECT HRS 34.54	160	160	160	160	160	160	160	160	160	160	160	160	1920
	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	5526.40	66316.80
TOTALS	320	320	320	320	320	320	320	320	320	320	320	320	3840
	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	10025.60	124315.20

P 179611/79A		TASK 3 5											
NAME/RATE	9/85	10/85	11/85	12/85	1/86	2/86	3/86	4/86	5/86	6/86	7/86	8/86	TOTALS
RESEARCH MGR HRS 30.23	160	160											320
	4838.80	4838.80											9677.60
ASSOC DIRECT HRS 37.13	160	160											320
	5940.80	5940.80											11881.60
TOTALS	320	320											640
	10779.60	10779.60											21559.20

TOTAL MOJRS 6400
TOTAL COST 197828.80

REFERENCE B - Basis for Overhead and G&A Estimate

IGT presently operates under a negotiated provisional overhead rate subject to post audit adjustment for all of its cost reimbursement type Government contracts. The cognizant agency performing audits for all Government contracts is the Defense Contract Audit Agency, 527 S. LaSalle St., Chicago, Illinois 60605 (312) 353-6870.

The indirect expense rate of 99.0% is applied to direct labor, and a separate G&A expense rate of 9.0% is applied to the total direct and indirect cost. The indirect expense rates beyond March 10, 1978 reflects IGT's election to use the CAS modified contract coverage clause 332. Briefly, this clause states the contractor will comply with CAS 401, Consistency in Estimating, Accumulating, and Reporting Costs, and 402, Consistency in Allocating Costs Incurred for the Same Purpose.

The methods illustrated in the IGT document entitled "Proposed Methods and Computation of Provisional Indirect Expense Rate for 1972 and Subsequent Fiscal Years," were used as the basis for determining the indirect expense rates, subject to applicable Cost Accounting Standards and Government Procurement Regulations. The computation of these rates was also based on IGT's fiscal 1979 preliminary operating budget.

The indirect expense pools included the following elements:

1. General and administrative expense
2. Clerical, secretarial and reproduction staff salaries and related fringe benefits
3. Salaries and related fringe benefits for vacation, sickness and administrative leave
4. Office supplies, telephone (except project related long distance), postage, insurance and duplication
5. Occupancy costs
6. Library service, computer rental and other expenses of a general nature not specifically assigned to other areas
7. Depreciation of facilities and equipment.

All costs allocated to the operation of the IGT Education Division are excluded from the overhead pool for Government contracts.

The indirect expense rate of 17.0% is applied to total direct cost at DOE Facility.

REFERENCE C - Basis for Direct Cost Estimates

The estimated cost given for materials, supplies, and equipment items are approximate, based on the best information we have inhand from manufacturers' or suppliers' published price catalogs, from past experience in purchase of similar items, from verbal or written quotes, or from engineering estimates.

IGT has complete machine shop facilities for the fabrication of special items of experimental and test equipment. The decision to fabricate equipment is made only in the event that it is established that a satisfactory item cannot be obtained from a regular commercial source.

Selection of vendors for commercially available items is made on the basis of competitive bidding, product quality and the vendor's ability to deliver the item when required.

Travel cost estimates are based on past experience for actual costs (not per diem) for similar trips as those specified above. A dollar value for ground transportation is included in Item 7a, as opposed to 7b, of Optional Form 60. Each employee is required to maintain a detailed record of actual expenses. See the attached table for a detailed cost estimate breakdown of travel expenses.

REFERENCE C - Basis for Direct Cost Estimate

The following supports lines 1a and 1b of OPTIONAL FORM 60

PURCHASED PARTS AND SUBCONTRACTED ITEMS

TASK NO.	DESCRIPTION	VENDOR	QUOTE CODE *	NO.	TOTAL COST
3	Coal-2400 tons @\$45/ton	VARIOUS	EE		108,000
3	Oxygen-36,000,000SCF @.29/c	VARIOUS	EE		104,400
3	Coke-120 tons @ \$45/ton	VARIOUS	EE		5,400
3	Steam-2,880,000 LBS@.25/c	VARIOUS	EE		7,200
3	Natural Gas-13,800,000/sfc@\$3/M	VARIOUS	EE		41,400
3	Electricity-180,000kw@.034/ea	VARIOUS	EE		6,120
3	Nitrogen-17,280,000 SCF @.26/c	VARIOUS	EE		46,728
	Plus \$150 per month				
	Total Purchased Parts - line 1a				319,248
3	Mechanical Services	MORRISON	EE		338,193
3	Instrument & Electrical Services	PANELLIT	EE		347,061
3	Insulation Services	ILLINOIS INSULATION	EE		85,502
	Total Subcontract Items-line 1b				770,756
	Total Materials				1,090,004

*Quote Code:

VQ - Verbal Quote
 WQ - Written Quote
 CA - Catalog Price
 EE - Engineering Estimate
 CI - Current Invoice

Proposal No. P179X11/79A
REFERENCE C - Basis for Direct Cost Estimate

The following supports lines 7a and 7b of Optional Form 60

TRAVEL SCHEDULE

Task No.	Men	Days	Round Trip	Airfare	Ground Trans.	Subsistence	No. of Trips	TOTAL
5	2	4	MEMPHIS	312	120	300	20	14,640
5	3	15	MEMPHIS	468	260	1125	8	14,824
5	2	10	MEMPHIS	312	240	750	12	15,624
			TOTAL					45,088

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-5) is required and (ii) substitution for the Optional Form 39 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Delta Refining Company, a Division of Earth Resources Company		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase III - Demonstration Plant Operation			
HOME OFFICE ADDRESS P. O. Box 9097 Memphis, Tennessee 38109					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED Memphis, Tennessee		TOTAL AMOUNT OF PROPOSAL \$		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS			3,500,000		Incl 1
b. SUBCONTRACTED ITEMS			400,000		Incl 1
c. OTHER—(1) RAW MATERIAL Coke, Coal, Catalyst, Chemicals			19,746,000		Incl 1
(2) YOUR STANDARD COMMERCIAL ITEMS Electricity, Water			7,411,151		Incl 1
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				31,057,151	
2. MATERIAL OVERHEAD ¹ (Rate % N.S. base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/ HOUR	EST COST (\$)	REFER- ENCE ²
Direct Labor (11/79 rates, 22 mo.)				9,165,367	Incl 2
Turnover costs				120,570	Incl 1
Training Costs (10% of Phase II Direct Training Costs)				68,100	
TOTAL DIRECT LABOR				9,354,037	
4. LABOR OVERHEAD (Specify Department or Cost Center) ¹		O.H. RATE	X BASE =	EST COST (\$)	REFER- ENCE ²
Salaried Personnel Burden		35%	2,859,317	993,761	Incl 2
Hourly Personnel Burden		30%	6,326,050	1,897,815	Incl 2
TOTAL LABOR OVERHEAD				2,891,576	
5. SPECIAL TESTING (Including field work at Government installations)				EST COST (\$)	
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)				EST COST (\$)	
a. TRANSPORTATION				18,900	Incl 1
b. PER DIEM OR SUBSISTENCE				25,010	Incl 1
TOTAL TRAVEL				43,910	
8. CONSULTANTS (Identify—purpose—rate)				EST COST (\$)	
TOTAL CONSULTANTS					
9. OTHER DIRECT COSTS (Itemize on Exhibit A)				(8,263,155)	Exhibit A
TOTAL DIRECT COST AND OVERHEAD				55,085,519	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 10 % of cost element Nos. 3, 4)				1,224,561	
12. ROYALTIES ¹ Future Escalation (10%/yr., elements 1, 3, 7, 9)				19,190,000	
TOTAL ESTIMATED COST				55,498,080	
14. FEE OR PROFIT 10% of Total Cost				5,549,808	
TOTAL ESTIMATED COST AND FEE OR PROFIT				61,047,888	

This proposal is submitted for use in connection with and in response to (Describe RFP, etc.)

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow

TYPED NAME AND TITLE

SIGNATURE

NAME OF FIRM

DATE OF SUBMISSION

EXHIBIT A—SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse)

COST EL NO.	ITEM DESCRIPTION (See footnote 5)	EST COST (\$)
	Taxes (in lieu paid by plant) (4,500,000/yr)	8,250,000
	Insurance (500,000/yr)	1,008,315
	Office supplies/materials/misc. expendables)	100,000
	Sub-total Costs	9,358,315
	CREDITS	
	SNG @ 3.00/10 ⁶ BTU	(6,750,000)
	Direct sale of IFG @ 4.00/10 ⁶ BTU	(8,400,000)
	Sulfur @ \$70/Ton FOB	(1,471,470)
	By-product Industrial Gases	(1,000,000)
	Sub-total Credits	(17,621,470)
	Grand Total Exhib. A	(8,263,155)

I. HAS ANY EXECUTIVE AGENCY OF THE UNITED STATES GOVERNMENT PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS?

☐ YES ☐ NO (If yes, identify below.)

NAME AND ADDRESS OF REVIEWING OFFICE AND INDIVIDUAL

TELEPHONE NUMBER/EXTENSION

II. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS PROPOSED CONTRACT?

☐ YES ☒ NO (If yes, identify on reverse or separate page)

III. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT?

☒ YES ☐ NO (If yes, identify.) ☐ ADVANCE PAYMENTS ☒ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

IV. DO YOU NOW HOLD ANY CONTRACT (Or, do you have any independently financed (IFGID) projects) FOR THE SAME OR SIMILAR WORK CALLED FOR BY THIS PROPOSED CONTRACT?

☐ YES ☒ NO (If yes, identify.)

V. DOES THIS COST SUMMARY CONFORM WITH THE COST PRINCIPLES SET FORTH IN AGENCY REGULATIONS?

☒ YES ☐ NO (If no, explain on reverse or separate page)

See Reverse for Instructions and Footnotes

OPTIONAL FORM 60 (10-71)

WORKING COST ESTIMATE

PHASE III (ALL 1979 \$)

A. Direct Labor

- 1) 22 months = 1.833 yrs.
 $6,577,750/\text{yr} \times 1.833 \text{ yrs.} = \underline{\$12,057,015.75}$
- 2) Turnover costs including retraining (1% direct labor)
 $12,057,015.75 \times .01 = \underline{\$120,570.00}$

B. Carryover training costs - 10% of Phase II
Estimated training \$68,100

C. Coal, Coke, Catalyst, Chemicals

- 1) 91 gasifier weeks uptime, say 7,000 tons/wk/gasifier
 $7,000 (91) = 637,000 \text{ tons}$ say 640,000 tons coal

P(a) = .3	a) @ \$22/ton = 14,080,000
P(b) = .5	b) @ \$26/ton = 16,640,000
P(c) = .2	c) @ \$30/ton = 19,200,000

Expected value of coal purchases = \$16,384,000

- 2) Coke 10% of gasifier requirement
 $.10 \times 640,000 = 64,000 \text{ tons}$

P(a) = .3	a) @ \$35/ton = 2,240,000
P(b) = .5	b) @ \$40/ton = 2,560,000
P(c) = .2	c) @ \$45/ton = 2,880,000

Expected value of coke purchases = \$2,528,000

- 3) Catalyst/Chemicals see pg. 1-7 (Task II report)

Assume 1 yr. usage = \$834,000

D. Electrical & Water

- 1) Electricity 45 MW total plant load, or 15 MW/operating gasifier
 $15 \text{ MW/Gasifier} \times 7 \text{ days/wk} \times 24 \text{ hrs/day} \times 91 \text{ gasifier wks.} =$
 $229,320 \text{ MW hrs.} = 229,320,000 \text{ KWH (+ 25% for air plant, other}$
 $\text{items while gasifiers down})$
 $229,320,000 \times 1.25 = 286,650,000 \text{ KWH}$

 $@ 2.5¢/\text{KWH} = \underline{\$7,166,250}$

- 2) Water 11,292 tons/day or 3,764 tons/day/gasifier

$$\frac{3,764 \text{ tons}}{\text{Day/gasifier}} \times \frac{2,000 \text{ lbs}}{\text{Ton}} \times \frac{\text{Ft}^3}{62.4 \text{ lbs}} \times \frac{7 \text{ days}}{\text{wk.}} \times \frac{4 \text{ wks.}}{\text{Mo.}}$$

$$= 3,377,949 \text{ ft}^3/\text{mo/gasifier}$$

Assume 29 gasifier months.

Total water required = 97,960,521
 @ .25/100 ft.³ = \$244,901

E. Maintenance/Project Work (Capital + Expenses)

- 1) Capital Improvements (re-works)

1% of installed capital at end of Phase II

a) \$250,000,000 Plant = \$2,500,000
 b) Subcontracted engineering = 400,000
\$2,900,000

- 2) Expenses (Mat'l, supplies, tools, etc. for normal maintenance work)
 = \$1,000,000

F. Travel & Subsistence Expenses

- a) To Washington, D.C.:

4 trips, 3 people,
 2 nights/trip

Travel	\$ 2,400
Hotel @ \$50/day	1,200
Living at \$20/day	960
Car Rental \$75/trip	300
Total	<u>\$ 4,860</u>

- b) To Livingston, N.J.

10 trips, 2 people,
 4 nights/trip

Travel	\$ 5,000
Hotel @ \$40/day	3,200
Living @ \$20/day	2,000
Car Rental \$100/trip	1,000
Total	<u>\$11,200</u>

- c) To Chicago, Ill.

5 trips, 2 people, night/trip

Travel	\$ 1,500
Hotel @ \$40/day	400
Living @ \$20/day	400
Car Rental @ \$50/day	250
Total	<u>\$ 2,550</u>

d) To symposia, conferences

10 trips, 2 people/trip,
2 nights/trip

Travel	\$ 5,000
Hotel @ \$50/night	2,000
Living @ \$20/day	800
Car Rental \$50/trip	500
Registration \$700/trip	7,000
Total	<u>\$15,300</u>

e) Misc. Travel & subsistence

\$10,000

TOTAL \$43,910

G. Taxes and Insurance

a) Taxes (in lieu paid by MLGW) $\$4,500,000 \times 1.833 = \underline{\underline{8,250,000}}$

b) Insurance (est by FWEC) $\$500,000/\text{yr} \times 1.833 = \underline{\underline{1,008,315}}$

H. 1) Office Supplies, Materials \$50,000

H. 2) Miscellaneous Expendables \$50,000

I. Credits (Using nominal Phase III Schedule)

a) SNG at $3.00/10^6$ BTU

1) 12.5×10^9 BTU/day $\times \$3.00/10^6$ BTU $\times 30$ days/mo. $\times 6$ mo.
= \$ 6,750,000

b) Direct sale of IFG @ $\$4.00/10^6$ BTU

35×10^9 BTU/day $\times 4.00/10^6$ BTU $\times 30$ days/mo $\times 2$ mo.
= \$8,400,000

c) Sulfur 33 tons/gasifier/day

$33 \times 7 \times 91 = 21,021$ tons
@ \$70/ton FOB = \$1,471,470

d) Industrial Gases \$1,000,000

TOTAL PHASE III CREDITS \$17,621,470

TABULATION

WORKING COST ESTIMATE - PHASE III - 1979 \$

<u>ELEMENT</u>	<u>DESCRIPTION</u>	<u>COSTS</u>
A 1.	Direct Labor + Burden	12,057,016
A 2.	Turnover/Retraining	120,570
B	Carryover Training Costs	68,100
C	Coal, Coke, Catalyst, Chemicals	19,746,000
D 1.	Electricity	7,166,250
D 2.	Water	244,901
E 1.	Maintenance/Project Work (Capital)	2,900,000
E 2.	Normal Maintenance	1,000,000
F	Travel & Subsistence	43,910
G 1.	Taxes (in-lieu payments)	8,250,000
G 2.	Insurance	1,008,315
H 1.	Office Supplies, Materials	50,000
H 2.	Miscellaneous Expendables	<u>50,000</u>
	Sub-total Costs	52,705,062
I 1.	SNG Credits	(6,750,000)
I 2.	Direct Sale of IFG	(8,400,000)
I 3.	Sulfur	(1,471,470)
I 4.	Industrial Gases	<u>(1,000,000)</u>
	Sub-total Credits	(\$17,621,470)
	NET PHASE III	\$35,083,592

Note: Does not include MLGW, FWEC, or IGT costs.

PHASE III - TEST SCHEDULE PROJECTIONS

MONTH	<u>PESSIMISTIC</u>		<u>NOMINAL</u>		<u>OPTIMISTIC</u>	
	<u>TEST</u>	<u>GAS CREDIT</u>	<u>TEST</u>	<u>GAS CREDIT</u>	<u>TEST</u>	<u>GAS CREDIT</u>
0	System Testing Comp.		System Testing Complete		System Testing Complete	
1	1st up 1 wk		1st up 1 wk		1st up 2 wks	
2	Analysis/ Maintenance		1st up 2 wks		2nd up 2 wks	
3	1st up 1 wk		A&M		3rd up 2 wks	
4	Analysis/ Maintenance		2nd up 2 wks		4th up 2 wks	
5	1st up 2 wks		3rd up 2 wks		A&M	
6	2nd up 2 wks		4th up 2 wks		1st & 2nd up 1 mo	X
7	A&M		A&M		A&M	
8	3rd up 2 wks		1st & 2nd up 1 mo	X	3rd & 4th up 1 mo	X
9	4th up 2 wks		3rd & 4th up 1 mo	X	A&M	
10	A&M -		A&M -		Project Work	
11	Project Work		Project Work		3 Gasifiers	
12	1st & 2nd up 1 mo	X	1st & 2nd up	X	Up for 3	X
13	A&M		2 months	X	Month Run	X
14	3rd & 4th up 1 mo	X	3rd & 4th up	X	A&M	
15	A&M		2 months	X	3 gasifiers	X
16	1st, 2nd, 3rd up 1 mo	X	A&M		Up for 3	X
17	A&M -		3 gasifiers		Month Run	X
18	Project Work		Up for 3	X	Analysis/M	
19	3 gasifiers up		Months	X	Final Project Work	
20	For 4 months	X	A&M Final		Start Gas Sales	
21	Period	X	Project Work			
22	-		Start Gas Sales		96 gasifier wks of coal	
23	A&M - Final				7 months of credit	
24	Project work		93 gasifier wks of coal			
	Start Gas Sales		8 months of credit			

86 gasifier wks of coal
5 months of credit

P (Pessimistic) = .4 P (Nominal) = .4 P (Optimistic) = .2
 E (Coal) = .4 (86) + .4 (93) + .2 (96) = 90.8, say 91 gasifier wks coal
 E (Credit) = .4 (5) + .4 (8) + .2 (7) = 6.6, say 6 months of credit
 E (Phase III) = .4 (24) + .4 (21) + .2 (19) = 21.8, say 22 months

COAL GAS DEMO PLANT
ESTIMATE OF PLANT STAFFING COST

<u>Position</u>	<u>Number</u>	<u>Individual Salary/Wage</u> (\$000)-1979	<u>Total Salary/Wage</u>
<u>PLANT MANAGER</u>			
Plant Manager	1	\$ 50	\$ 50
Plant Manager's Secretary	1	13	13
<u>OPERATIONS</u>			
Operations Director	1	40	40
Operations Director's Secretary	1	11	11
Operations Manager	1	33	33
Gen. Opns. Supervisors (Engineers)	4	30	120
Asst. Opns. Supervisors	5	23	115
Timekeeper/Clerk	1	9	9
Operations Department (excluding Hourly Workers testers & samplers)	94	\$10.00*	2,124.4
Laboratory Manager	1	25	25
Secretary/Clerk	1	10	10
Chemist	3	20	60
Testers-Hourly	5	16	80
Samplers-Hourly	6	14	84
Process Engineering Manager	1	35	35
Process Engr.-Gasifiers/Cooling	1	30	30
Process Engr.-Treat/By-Products	1	25	25
Process Engr.-Air Plant/Coal Prep.	1	25	25
Process Engr.-Utilities/Offsites	1	25	25
Technicians	2	18	36
Drafting	2	15	30
<u>MAINTENANCE</u>			
Maintenance Director	1	37	37
Maintenance Dir. Secretary	1	11	11
Page Total	136		\$3,028.4

*Wages and shift differential assumed to average \$10.00/hr. and include 120 hours overtime/yr. at 1-1/2 x rate.

ESTIMATE OF PLANT STAFFING COST

<u>MAINTENANCE</u> (Cont'd)	<u>Number</u>	<u>Individual Salary/Wage \$(000)-1979</u>	<u>Total Salary/Wage</u>
Manager Project Engineering	1	\$ 33	\$ 33
Project Eng., Instrument/Elec.	1	30	30
Project Eng., Mechanical	2	25	50
Project Eng., Materials	1	23	23
Technicians	2	18	36
Draftsmen	2	15	30
Preventive Maint. Sched/Cont. Supv.	1	27	27
Planner	2	18	36
Scheduler/Control	1	15	15
Maintenance Manager	1	30	30
Maintenance Foreman	5	25	125
Craftsmen	28	\$9.50**	601.2
Apprentices/Helpers/Eq. Oper.	22	\$8.50***	422.6
Laborers	5	\$7.50****	84.8
Purchasing Agent	1	23	23
Purchasing Specialist/Secretary	1	11	11
Warehouse Supv.	1	20	20
Warehousemen	3	\$8.00*****	54.2
<u>MARKETING/SUPPLY</u>			
Marketing/Supply Manager	1	25	25
Marketing/Supply Secretary	1	10	10
<u>ACCOUNTING/EDP</u>			
Accounting/EDP Manager	1	27	27
Accounting/EDP Secretary	1	10	10
Clerks (Payroll, Payables, etc.)	4	10	40
Page Total	88		\$1,763.8

**Wages assumed to average \$9.50/hr. and includes 120 hrs. overtime at 1-1/2 x rate.

***\$8.50/hr.; 120 hrs. O.T.

****\$7.50/hr.; 120 hrs. O.T.

*****\$8.00/hr.; 120 hrs. O.T.

ESTIMATE OF PLANT STAFFING COST

<u>ACCOUNTING EDP</u> (Cont'd)	<u>Number</u>	<u>Individual Salary/Wage \$(000)-1979</u>	<u>Total Salary/Wage</u>
Systems Analyst	1	\$ 25	\$ 25
Data Entry Clerk	2	10	20
<u>EMPLOYEE RELATIONS</u>			
Employee Relations Manager	1	25	25
Employee Relations Secretary/Clerk	1	11	11
Personnel Specialist	1	15	15
Switchboard/Receptionist	1	10	10
Messenger/Mail Clerk	1	9	9
<u>PUBLIC RELATIONS</u>			
Public Relations Manager	1	23	23
Public Relations Secretary	1	10	10
<u>SAFETY/HEALTH</u>			
Safety/Health Manager	1	25	25
Industrial Nurse	1	15	15
Medical Doctor (Part-time)	1	20	20
Page Total	13		\$ 208

Total Plant Personnel = 237

Total Plant Direct Payroll = \$5,000,200

Total Plant Salaried Payroll = \$1,549,000

35% Burden = \$ 542,150

Total Salaried Cost = \$2,091,150

Total Plant Hourly Payroll = \$3,451,200

30% Burden = \$1,035,400

Total Hourly Cost = \$4,486,600

Total Plant Staff Cost \$6,577,750

ESCALATION ANALYSIS

<u>Escalation Factor</u>	<u>Nominal Expenditure</u>	<u>Total</u>
Nov. 84 + 61%*	\$15,000,000	\$24,150,000
Nov. 85 + 77.2%*	17,000,000	<u>30,124,000</u>
		\$54,274,000

Escalation Amount = \$54,274,000 - \$35,084,000
= \$19,190,000

*Compound interest at 10%/year

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO. 1	NO. OF PAGES 7
NAME OF OFFEROR Foster Wheeler Energy Corporation HOME OFFICE ADDRESS 110 South Orange Avenue Livingston, New Jersey 07039		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase III Demonstration Plant Operation			
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED Process Plants Division, Livingston, N.J.		TOTAL AMOUNT OF PROPOSAL \$ 3,100,003		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS Nov. 15, 1979					
1. DIRECT MATERIAL (Itemize on Exhibit A)		EST COST (\$)		TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS					
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD ³ (Rate % X \$ base =)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/ HOUR Avg	EST COST (\$)	
Technical Labor (Oct. 1979 Rates)		21,650	\$14.71	318,428	Page 3
TOTAL DIRECT LABOR				318,428	
4. LABOR OVERHEAD (Specify Department or Cost Center) ³		O.M. RATE	X BASE =	EST COST (\$)	
Department Overhead (1978 Audit)		63%	318,428	200,658	Page 3
TOTAL LABOR OVERHEAD				200,658	
5. SPECIAL TESTING (Including field work at Government installations)				EST COST (\$)	
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)				EST COST (\$)	
a. TRANSPORTATION and Living				46,000	Page 3
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL				46,000	
8. CONSULTANTS (Identify—purpose—rate)				EST COST (\$)	
Environmental (EIA)				1800,003	
TOTAL CONSULTANTS				1800,003	
9. OTHER DIRECT COSTS (Itemize on Exhibit A)				21,150	Page 3
TOTAL DIRECT COST AND OVERHEAD					
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 39.8 % of cost element Nos. 3) ⁴				126,764	Page 3
12. Estimated Escalation				427,000	Page 3
13. TOTAL ESTIMATED COST				\$2940,003	
14. FEE OR PROFIT Per DOE Procedures Weighted Guidelines				160,000	Page 4
15. TOTAL ESTIMATED COST AND FEE OR PROFIT				3100,003	

	<u>Task III Technical Support</u>	<u>Task IV Reassessment & Design</u>	<u>Task V Project Management</u>	<u>Phase III Totals</u>
Technical Manhours	2,900	15,250	3,500	21,650
<u>Estimated Costs</u>				
Base Salary	\$ 43,400	\$214,198	\$ 60,830	\$318,428
Department Overhead	29,476	128,452	42,730	200,658
Travel & Living Expense	10,000	24,000	12,000	46,000
Other Direct Cost	2,850	13,100	5,200	21,150
G. & A. Overhead	<u>17,274</u>	<u>85,250</u>	<u>24,240</u>	<u>126,764</u>
Total Current Day Cost	\$103,000	\$465,000	145,000	\$713,000
Estimated Escalation	62,000	280,000	85,000	<u>427,000</u>
Total Estimated Cost				\$1,140,000
Engineering Fee or Profit				<u>160,000</u>
Total Estimated Cost & Fee				\$1,300,000
Consultant (EIA)				<u>1,800,003</u>
				\$3,100,003

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Energy Impact Associates Inc.		SUPPLIES AND/OR SERVICES TO BE FURNISHED Phase III Environmental Support Tasks for the Memphis Light, Gas and Water Division Industrial Fuel Gas Demonstration Plant (N-218)			
HOME OFFICE ADDRESS P.O. Box 1899 Pittsburgh, PA. 15230					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED		TOTAL AMOUNT OF PROPOSAL \$ 1,800,003.		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)			EST COST (\$)	TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS			35626		
b. SUBCONTRACTED ITEMS					
c. OTHER — (1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				35,626	
2. MATERIAL OVERHEAD ³ (Rate % X \$ base =)					
3. DIRECT LABOR (Specify Staff)			ESTIMATED HOURS	RATE/ HOUR	EST COST (\$)
Senior Staff					
Manager/Fellow Scientist			4189	14.49	60,699
Senior Engineer/Scientist			3632	10.70	38,862
Engineer/Scientist			2319	9.02	20,917
Associate Engineer/Scientist			1417	7.32	10,768
Technical Editor			790	8.57	6,770
Senior Technical			3297	7.50	24,728
Draftsman			737	6.06	4,466
TOTAL DIRECT LABOR					194,927
4. LABOR OVERHEAD (Specify Department or Cost Center) ⁴			O.H. RATE	X BASE	EST COST (\$)
			158.8%	194,927	309,544
TOTAL LABOR OVERHEAD					309,544
5. SPECIAL TESTING (Including field work at Government installations)			EST COST (\$)		
Lab Testing, Sample and Leaching Analyses			170,000		
TOTAL SPECIAL TESTING			170,000		
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)			EST COST (\$)		
Computer			10,000		
7. TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST (\$)		
a. TRANSPORTATION			60,600		
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL			60,600		
8. CONSULTANTS (Identify—purpose—rate)			EST COST (\$)		
Legal and Technical Environmental Specialists (Permitting)			10,000		
Memphis Area Consultants (MSU, Ramcon, etc)			80,000		
TOTAL CONSULTANTS			90,000		
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
TOTAL DIRECT COST AND OVERHEAD			870,697		
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 27.9 % of cost element Nos.) ⁵			242,924		
12. XXXXX Escalation @7% per year through 1986			553,048		
TOTAL ESTIMATED COST			1,666,669		
14. FEE OR PROFIT 8%			133,334		
TOTAL ESTIMATED COST AND FEE OR PROFIT			1,800,003		

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

SIGNATURE

A. E. Rogers

Dec. 14, 1979

EST COST (\$)

35,626

60,600

☒ YES ☐ NO (If yes, identify below.)

412-644-3461

☒ YES ☐ NO (If yes, identify on reverse or separate page) Air Quality Monitoring Equipment

☒ YES ☐ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☒ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

☐ YES ☒ NO (If yes, identify.):

☒ YES ☐ NO (If no, explain on reverse or separate page)

OPTIONAL FORM 60 (10-71)

MEMPHIS PHASE III

Cost Summary (1000's)

<u>Year</u>	<u>Task</u>				<u>Yearly Total</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>V</u>	
(84)	58,098	64,817	343,948	17,770	484,633
(85)	124,410	--	666,102	81,552	872,064
(86)	33,317	74,202	315,444	20,343	443,306
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Task Total	215,825	139,019	1,325,494	119,665	1,800,003

TOTAL PROGRAM REQUIREMENTS

<u>Organization</u>	Current Costs		At 7% Esc. Rate Total		At Base Case Escalation Rate	
	<u>Phase II</u>	<u>Phase III</u>	<u>Phase II</u>	<u>Phase III</u>	<u>Phase II</u>	<u>Phase III</u>
MLGW	\$ 5,086,693	\$17,476,362	6,435,157	18,167,304	6,435,157	18,167,304
IGT	10,060,015	3,841,185	11,520,246	5,263,882	11,628,604	5,381,024
DRC	8,277,332	41,857,888	9,726,479	56,964,061	10,448,862	61,047,888
FWEC	<u>\$331,427,472</u>	<u>2,386,955</u>	<u>405,151,969</u>	<u>3,100,013</u>	<u>405,151,969</u>	<u>\$ 3,100,003</u>
Totals	\$354,851,512	65,562,390	432,833,851	82,495,250	433,664,632	\$87,696,219

Total Program Requirements: 515,329,101 - 7% escalation

521,360,851 - Base Case

**MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM**

F FOSTER WHEELER
CURRENT WORKING ESTIMATES

Section 13.0

SUMMARY OF CAPITAL COST ESTIMATE

This section includes a summary of the Capital Cost Estimate made for the Demonstration Plant. In order to maintain the work breakdown structure required for Phase II, the capital cost estimate was accomplished by area and zone.

Each area of the plant is a distinct section of the plant, and each zone is one or more areas. Zones are required because, in several cases, two or more area share a common pipe rack or other common civil, electrical, or instrument facilities. Table 13.1 identifies the zone/area designations used for the Capital Cost Estimate.

Table 13.2 contains the Demonstration Plant Capital Investment Estimate Summary as well as a summary and details for each section of the plant. The total estimate for the demonstration plant is based on October 1979 costs.

General notes and exclusions applicable to the budget cost estimate are presented in Parts A and B below.

A. General

1. The estimate has been compiled by identifying the estimated costs on a section-by-section basis, then combining them into common plot areas (zones). These costs include:

- . Code 1000 - Materials-Process Equipment and Other Materials
- . Code 2000 - Subcontracts-Material and Labor
- . Code 3000 - Direct Labor

The following costs were calculated for all zones on an overall basis consisting of:

- . Codes 5/7000 - Foster Wheeler Construction Management
- . Code 8000 - Foster Wheeler Engineering Costs
- . Code 9000 - Insurance

2. The Beavon Tail Gas Treating Unit and the "Cold Box Package" of the Air Separation Unit and Flue Gas Desulfurization have been quoted as totally erected projects. Royalty payment for the Beavon Tail Gas Unit has been included.

**MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM**

F FOSTER WHEELER
CURRENT WORKING ESTIMATES

3. Cost of process and support equipment is based on vendor quotes, estimates or "in-house" estimates.
4. Estimate is based upon October 1979 price structure; forward escalation has been calculated separately as shown in Section 14.
5. Estimate includes labor cost based on a single shift standard craft agreement workweek.
6. All risk construction insurance is included.

7. General Notes

Start-up cost not included in estimate. Start-up will occur in Phase III.

B. Exclusions

1. Cost of land.
2. Cost of all taxes, licenses, and permits.
3. Warehouse spare parts.
4. Product gas line from north fence line to industrial customers.
5. Cafeteria Equipment.
6. Coal, coke, catalysts, chemicals, and miscellaneous consumables (unless specifically noted).
7. Start-up expenses.
8. Craft training program.
9. Construction camp facilities.
10. Forward escalation.
11. Interest and financing charges during construction.
12. Home office engineering costs for Memphis Light, Gas and Water Division, Delta Refining Company, and Institute of Gas Technology, and "non-plant engineering" costs of FWEC.

**MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM**

FW FOSTER WHEELER
CURRENT WORKING ESTIMATES

Table 13.1

ZONE DESIGNATIONS

Zone I

- 2249 Dock Facilities
- 2241 Coal/Coke Handling
- 2232 Coal/Coke Treating & Feed partial
(excludes coal hoppers in Gasifier complex)

Zone II

- 2232 Coal/Coke Treating & Feed partial
(coal hoppers)
- 2233 Coal Gasification
- 2242 Ash Treatment partial
(excludes Clarifiers)
- 2234 Gas Cooling & Scrubbing

Zone III

- 2235 Gas Compression (Raw/Recycle Gas)
- 2236 Gas Treating

Zone IV

- 2237 Sour Water Stripping

Zone V

- 2238 Sulfur Recovery
- 2239 Tail Gas Treating

Zone VI

- 2231 Air Separation and Plant Air partial
(excludes N₂ Storage)

Zone VII

- 2222 Credit Generation

Zone VIII

- 2242 Ash Treatment partial
(Clarifiers)

MLGW/DOE INDUSTRIAL FUEL GAS
DEMONSTRATION PLANT PROGRAM

FOSTER
CURRENT WORK

Zone IX

2243 Utilities

Zone X

2244 Waste Water Treatment

Zone XI

2245 Cooling Tower

Zone XII

2246 Flare

Zone XIII

2248 Buildings

Zone IV

2247 General Offsites

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11.16.79

SUBJECT ZONE I SUMMARY

PREPARED BY: JSW/JJK

SHEET NO. 1 OF 2

	A-EQUIPMENT	COST CODE	QTY	MATERIALS COST CODE 1000 TOTAL	SUBCONTRACTS				MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
																				PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED																						
	150 - - FIELD FABRICATED																						
	120 - REACTORS																						
	130 - DRUMS																						
	110 - TRAYS - ALL																						
	110 - PACKING - ALL																						
	110 - PACKING SUPPORTS - ALL																						
	110 - LININGS																						
	140 - STORAGE TANKS - SHOP FAB.																						
	180 - CEMENT SILE - FIELD FAB.		2			270000	630000	900000	25200														
HEAT TRANSFER	160 - PROCESS DUCTS																						
	160 - TRANSFER LINES																						
	210 - EXCHANGERS - S/T																						
	220 - DOUBLE PIPE																						
	230 - AIR FANS																						
	240 - HEATERS																						
	240 - STACKS																						
	250 - STEAM BOILERS																						
	260 - COOLING TOWER																						
	270 - VACUUM EQUIPMENT																						
MECH. EQUIP.	280 - REFRIGERATION EQUIPMENT																						
	290 - DEAERATORS																						
	310 - PUMPS		1	3000											30	11.97		1.19		40	480	50	
	380 - DRIVERS																						
	320 - COMPRESSORS & DRIVERS																						
	320 - BLOWERS																						
	340 - BIN ACTUATOR		4	45000											110	11.33		1.29		130	1470	170	
	340 - FILTERS & SEPARATORS			285000											1880	11.33		1.29		2260	25610	2920	
	350 - SOLIDS HANDLING EQUIPMENT			3461000											18410	11.33		1.29		22100	250390	28510	
	360 - MAT'L TRANSPORT EQUIP.			115000	3539500	1308000	4847500	52320							740	11.33		1.29		890	10080	1140	
MISC.	390 - MIXERS & AGITATORS																						
	370 - THERMAL EQUIP.			195000											780	11.33		1.29		940	10650	1210	
	910 - PACKAGE UNITS																						
	SUB-TOTAL "A" EQUIPMENT			4104000	3809500	1938000	5747500	77520							21950					26360	298680	34000	

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE
LOCATION MEMPHIS, TENN.
SUBJECT ZONE I Summary

NO. 15-2203
DATE 11.16.78
PREPARED BY TJW/LK
SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.	MATERIAL	% B.O.M.P.A.I.	STANDARD M.HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M.HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				197000	197000	15040								1.2			
410 - ROADS & FENCES																	
420 - PILING																	
430 - UNDERGROUND CONCRETE			543200	1213800	1757000	75170											
430 - CONCRETE - STRUCTURES			8500	20500	29000	1260											
430 - - YARD RACK																	
430 - PAVING - ALL			12100	33900	46000	2100											
460 - STRUCTURAL STEEL - ALL		88000							1890	10.86		1.50			2270	24630	3590
480 - STEEL YARD RACK																	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
- ROOF (CONVEYOR)			600	400	1000	20											
492 - DOCK FACILITIES			780000	1820000	2600000	12000											
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING		270000							11550	13.42		1.05			13660	186010	14560
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL																	
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING		216000							13240	13.42		1.05			15890	213240	16680
600 - - ELECTRICAL																	
600 - CONTROL SYSTEM		96000							3170	13.42		1.05			3800	51000	3990
700 - UNDERGROUND		154000							22830	12.13		1.95			27400	332360	53430
700 - POWER-EQUIPMENT		WSECT. 470															
700 - DISTRIBUTION		117000							21330	12.13		1.95			25600	310530	49920
700 - LIGHTING		100000							10150	12.13		1.95			12180	147740	23750
700 - COMMUNICATIONS		WSECT. 470															
-																	
700 - ELECTRIC TRACING																	
821 - INSULATION - PIPE																	
822 - INSULATION - EQUIPMENT																	
830 - PAINTING			6100	39900	41000	1750											
840 - FIREPROOFING																	
900 - TESTING		2000							1240	13.42		1.05			1490	19160	2150
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		1043,000	1350500	3320500	4671000	168110			85400						102490	1284670	168070
TOTAL COSTS ("A" & "B")		5,147,000	5160000	5258500	10418500	215660			107350						128850	1583350	202070

MATERIALS, SUBCONTRACTS, & LABOR. COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.M./DOE

NO. 15-2203

LOCATION NEIGHS TENN.

DATE 11-16-79

SUBJECT Section 320 - ZONE I

PREPARED BY: TUN/UX

SHEET NO 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 8000 TOTAL	BENEFIT TOTAL

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W/ DOE
LOCATION MEMPHIS, TENN
SUBJECT SECTION, 320 - ZONE I

NO. 15-2203
DATE 11-16-77
PREPARED BY TJW/JJK
SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.	MATERIAL	STANDARD M.HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M.HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				197000	197000	15040							1.2			
410 - ROADS & FENCES																
420 - PILING																
430 - UNDERGROUND CONCRETE			543200	1213800	1757000	75170										
430 - CONCRETE - STRUCTURES			8500	20500	29000	1260										
430 - YARD RACK																
430 - PAVING - ALL			12100	33900	46000	2100										
460 - STRUCTURAL STEEL - ALL		88000						1890	10.85		1.58			2270	24630	3590
480 - STEEL YARD RACK																
470 - BUILDING																
490 - TROLLEYS, CRANES, HOISTS																
- ROOF CONVEYOR			600	400	1000	20										
500 - VALVES																
500 - SHOP FABRICATED PIPING																
500 - LARGE O.D. PIPING		205000						10250	13.42		1.05			12300	165070	12920
500 - FIELD FABRICATED PIPING																
500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL																
600 - INSTRUMENT & SPECIALTIES																
500 - INSTRUMENT - PIPING		195000						10000	13.42		1.05			12000	161040	12600
600 - ELECTRICAL																
700 - UNDERGROUND		154000						22830	12.13		1.95			27400	332360	53430
700 - POWER-EQUIPMENT		WSECT 470														
700 - DISTRIBUTION		117000						21330	12.13		1.95			26600	310530	49920
700 - LIGHTING		100000						10150	12.13		1.95			12180	147740	23750
700 - COMMUNICATIONS		WSECT 470														
700 - ELECTRIC TRACING																
821 - INSULATION - PIPE																
822 - INSULATION - EQUIPMENT																
830 - PAINTING			5500	31500	37000	1580										
880 - FIREPROOFING																
900 - TESTING		1000						1160	12.82		1.47			1390	17820	2040
900 - CATALYST & CHEMICALS																
900 - EQUIP. SHOP, LAB & OFFICE																
900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		860000	569900	1497100	2067000	96170		77610						93140	1,159,190	158250
TOTAL COSTS ("A" & "B")		4534000	1668900	2433100	4102000	132610		96890						116280	1421360	188100

MATERIALS, SUBCONTRACTS, & LABOR. COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11.16.79

SUBJECT SECTION 40 - ZONE I

PREPARED BY: TJW/WK

SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - C.F. FABRICATED																
	150 - TOWERS - FIELD FABRICATED																
	120 - REACTORS																
	130 - DRUMS																
	-																
	110 - TRAYS - ALL																
	110 - PACKING - ALL																
	110 - PACKING - PORTS - ALL																
	110 - LININGS																
	-																
HEAT TRANSFER	140 - STORAGE - SHOP FAB.																
	140 - STORAGE - FIELD FAB.																
	-																
	160 - PROCESS DUCTS																
	160 - TRANSFER LINES																
	-																
	210 - EXCHANGERS - S/T																
	220 - DOUBLE PIPE																
	230 - AIR FANS																
	-																
MECH. EQUIP.	240 - HEATERS																
	240 - STACKS																
	-																
	250 - STEAM BOILERS																
	-																
	260 - COOLING TOWER																
	270 - VACUUM EQUIPMENT																
	280 - REFRIGERATION EQUIPMENT																
	290 - DEAERATORS																
	-																
MISC.	310 - PUMPS	1	3000						30	11.97		1.19		1.2	40	480	50
	380 - DRIVERS																
	320 - COMPRESSORS & DRIVERS																
	320 - BLOWERS																
	-																
	330 - ELECTRICAL GENERATOR																
	340 - FILTERS & SEPARATORS		285000						1880	11.33		1.29			2260	25610	2920
	350 - SOLIDS HANDLING EQUIPMENT		108000						580	11.33		1.29			700	7930	900
	360 - MATERIAL TRANSPORT EQUIP		34000	2710500	1002000	3712500	40080		180	11.33		1.29			220	2490	280
	390 - MIXERS & AGITATORS																
910 - PACKAGE UNITS																	
-																	
-																	
SUB-TOTAL "A" EQUIPMENT		430000	2710500	1002000	3712500	40080			2670						3220	36510	4,150

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE 11-16-79

SUBJECT SECTION 410 - ZONE I

PREPARED BY TJW/LJK

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY					
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SH-6-UMPAV I	STANDARD M'HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M'HRS.	COST CODE #000 TOTAL	BENEFIT TOTAL		
CIVIL	410 - EARTHWORK	}	WITH SECTION 32a - ZONE I																
	410 - ROADS & FENCES																		
	420 - PILING																		
	430 - UNDERGROUND CONCRETE																		
	430 - CONCRETE - STRUCTURES																		
	430 - YARD RACK																		
	430 - PAVING - ALL																		
	460 - STRUCTURAL STEEL - ALL																		
	480 - STEEL YARD RACK																		
	470 - BUILDING																		
490 - TROLLEYS, CRANES, HOISTS																			
PIPING	500 - VALVES	}	65000						1300	13.42		1.05		1.2	1560	20940	1690		
	500 - SHOP FABRICATED PIPING																		
	500 - LARGE O.D. PIPING																		
	500 - FIELD FABRICATED PIPING																		
	500 - SPECIALTIES																		
	500 - UNDERGROUND PIPING - ALL																		
INSTRUMENTS	600 - INSTRUMENT & SPECIALTIES	}	21000						3240	13.42		1.05			3890	52200	4080		
	500 - INSTRUMENT - PIPING																		
	600 - ELECTRICAL																		
	600 - CONTROL SYSTEM																		
ELECTRICAL	700 - UNDERGROUND	}	WITH SECTION 32a - ZONE I						3170	13.42		1.05			3800	51000	3990		
	700 - POWER-EQUIPMENT																		
	700 - DISTRIBUTION																		
	700 - LIGHTING																		
	700 - COMMUNICATIONS																		
	700 - ELECTRIC TRACING																		
PROTECTIVE COVER	821 - INSULATION - PIPE																		
	822 - INSULATION - EQUIPMENT																		
	830 - PAINTING	600	3400	4000	170														
	840 - FIREPROOFING																		
MISCELLANEOUS	900 - TESTING	1000							80	13.42		1.05			100	1340	110		
	900 - CATALYST & CHEMICALS																		
	900 - EQUIP. SHOP, LAB & OFFICE																		
	900 - FIRE PROTECTION & SAFETY																		
SUBTOTAL "B" OTHER MATERIAL		183000	600	3400	4000	170			7790						9350	125480	9820		
TOTAL COSTS ("A" & "B")		613000	2711100	1005400	3716500	40250			10460						12570	161990	13970		

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER

MGW/DOE

LOCATION

SUBJECT

SECTION 490 - ZONE 7

NO

15.2203

DATE _____

11.76.24

PREPARED BY

PREPARED BY Ch
 I NO. 1 OF 1

[illegible]

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W. / DOE
 LOCATION MEMPHIS, TENN.
 SUBJECT ZONE II SUMMARY

NO. 15-2203
 DATE 11-2-79
 PREPARED BY: TJW/JJK
 SHEET NO. 1 OF 2

PUMP NO. 120-1001

A-EQUIPMENT			MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE		QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	N'HRS.	MATERIAL	SUBCONTRACT	STANDARD N'HRS	LABOR RATE	PAYROLL	COST CODE 71% RATE	COST	PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL	
																N'HRS.	COST CODE 4000 TOTAL		
VESSELS	110 - TOWERS - SHOP FABRICATED	4	558000							720	10.70		2.17			940	10060	2040	
	150 - FIELD FABRICATED																		
	120 - REACTORS	4	2595000							4560	10.70		2.17			5930	63450	12870	
	130 - DRUMS	21	649000							2520	10.70		2.17			3280	35100	7120	
	110 - TRAYS - ALL																		
	110 - PACKING - ALL																		
	110 - PACKING SUPPORTS - ALL																		
	110 - LININGS																		
140 - STORAGE TANKS - SHOP FAB.																			
140 - FIELD FAB.																			
160 - PROCESS DUCTS																			
160 - TRANSFER LINES																			
HEAT TRANSFER	210 - EXCHANGERS - S/T	40	4507000							13520	13.42		1.05			17570	235790	18450	
	220 - DOUBLE PIPE																		
	230 - AIR FANS																		
	240 - HEATERS	8	276000							440	13.42		1.05			570	7650	600	
	240 - STACKS																		
	250 - STEAM BOILERS																		
	260 - COOLING TOWER																		
	270 - VACUUM EQUIPMENT																		
280 - REFRIGERATION EQUIPMENT																			
290 - DEAERATORS																			
MECH. EQUIP.	310 - PUMPS	32	184000							1040	11.97		1.19			1350	16160	1610	
	380 - DRIVERS																		
	320 - COMPRESSORS & DRIVERS																		
	320 - BLOWERS																		
	330 - ELECTRICAL GENERATOR																		
	350 - FILTERS & SEPARATORS	2	26000							160	11.33		1.29			210	2380	270	
	350 - SOLIDS HANDLING EQUIPMENT (CYCLOMES)		1004000							8000	11.33		1.29			10400	117830	13420	
	350 - SCRUBBERS	8	330000							400	11.33		1.29			520	5890	670	
	340 - MAT'L TRANSPORT EQUIP.		2896000	107000	39000	146000	1560			6700	11.33		1.29			8710	98680	11240	
370 - ROTARY COOLERS	4	577000							680	11.33		1.29			880	9970	1140		
910 - PACKAGE UNITS		389000							2740	11.33		1.29			3560	40340	4590		
SUB-TOTAL "A" EQUIPMENT			13991000	107000	39000	146000	1560			41480						53920	643300	74020	

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.B.W./DOE
LOCATION MEMPHIS TENN.
SUBJECT ZONE II SUMMARY

NO. 15-2203
DATE 11-2-79
PREPARED BY TJW/DK
SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
110 - EARTHWORK				98000	98000	6040							1.3			
110 - ROADS & FENCES																
120 - PILING																
130 - UNDERGROUND CONCRETE			667500	867300	1534800	47130										
130 - CONCRETE - STRUCTURES																
130 - - YARD RACK																
130 - PAVING - ALL			12000	40900	52900	2530										
160 - STRUCTURAL STEEL - ALL		4550,000						110940	10.85		1.58			111710	1212,060	176510
180 - STEEL YARD RACK		69000						1450	10.85		1.58			1570	20450	2980
170 - BUILDING (ROOFING MAT'L)			8300	5500	13800	280										
190 - TROLLEYS, CRANES, HOISTS	1	3000						30	10.11		1.24			40	400	50
193 - ELEVATOR	1		112000	48000	160000	2400										
500 - VALVES																
500 - SHOP FABRICATED PIPING																
500 - LARGE O.D. PIPING		5,450,000						127500	13.42		1.05			165750	2224,370	174040
500 - FIELD FABRICATED PIPING																
500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL		11000						3150	13.42		1.05			4100	55020	4310
600 - INSTRUMENT & SPECIALTIES																
600 - INSTRUMENT - PIPING		2552000						44520	13.42		1.05			57580	772720	60460
600 - - ELECTRICAL								53720	12.13		1.95			69840	847160	136190
600 - SLIDE VALVES		442000						INCLUDED								
700 - UNDERGROUND		62000						12060	12.13		1.95			15680	190200	30580
700 - POWER-EQUIPMENT		19000						900	12.13		1.95			1170	14190	2280
700 - - DISTRIBUTION		212000						15500	12.13		1.95			20150	244420	39300
700 - LIGHTING		376000						70900	12.13		1.95			92170	1118020	179730
700 - COMMUNICATIONS		W/SECT. 470														
700 - ELECTRIC TRACING																
INSULATION INSTR.			43000	102000	145000	5100										
821 - INSULATION - PIPE			165300	395700	551000	19290										
822 - INSULATION - EQUIPMENT			68100	158900	227000	7940										
830 - PAINTING			46000	258000	304000	12900										
840 - FIREPROOFING			451800	1,807,200	2,259,000	90360										
870 - REFRACTORY LINING			131000	71000	202000	3530										
900 - TESTING		2000						8570	13.28		1.18			11140	147940	12810
900 - CATALYST & CHEMICALS																
900 - EQUIP. SHOP, LAB & OFFICE																
900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		13,748,000	1,705,000	3,842,500	5,547,500	197500		449240						551220	6,846,950	819240
TOTAL COSTS ("A" & "B")		27,739,000	1,812,000	3,881,500	5,693,500	197000		490720						605140	7,490,250	893260

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

NO. 15-2203

DATE 11-2-79

PREPARED BY: 7/40

SHEET NO 1 OF 2

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MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER ML&W/DOE
LOCATION MEMPHIS TENN
SUBJECT SECTION 320 - ZONE II

NO. 15-2203
DATE 11-2-79
PREPARED BY JW
SHEET NO. 2 OF 2

B- OTHER MATERIAL			MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
	COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M' HRS.	MATERIAL	SI-B-UMPM	STANDARD M' HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
													RATE	COST		M' HRS.	COST CODE 4000 TOTAL	
CIVIL	410 - EARTHWORK																	
	410 - ROADS & FENCES																	
	420 - PILING																	
	430 - UNDERGROUND CONCRETE																	
	430 - CONCRETE - STRUCTURES																	
	430 - - YARD RACK																	
	430 - PAVING - ALL																	
	460 - STRUCTURAL STEEL - ALL																	
	480 - STEEL YARD RACK																	
	470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																		
PIPING	500 - VALVES																	
	500 - SHOP FABRICATED PIPING																	
	500 - LARGE O.D. PIPING																	
	500 - FIELD FABRICATED PIPING																	
	500 - SPECIALTIES																	
	500 - UNDERGROUND PIPING - ALL																	
INSTRUMENTS	600 - INSTRUMENT & SPECIALTIES																	
	500 - INSTRUMENT - PIPING																	
	600 - - ELECTRICAL																	
ELECTRICAL	700 - UNDERGROUND																	
	700 - POWER-EQUIPMENT																	
	700 - DISTRIBUTION																	
	700 - LIGHTING																	
	700 - COMMUNICATIONS																	
	700 - ELECTRIC TRACING																	
PROTECTIVE COVER	821 - INSULATION - PIPE																	
	822 - INSULATION - EQUIPMENT																	
	830 - PAINTING																	
	840 - FIREPROOFING																	
MISCELLANEOUS	900 - TESTING																	
	900 - CATALYST & CHEMICALS																	
	900 - EQUIP. SHOP, LAB & OFFICE																	
	900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL			147000	4000	26000	30000	1300			7000						9100	110380	17750
TOTAL COSTS ("A" & "B")			3 091 000	111000	65000	176 000	2860			14100						18,330	214,950	29660

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE

SUBJECT COAL GASIFICATION - SECTION 330 - ZONE II

PREPARED BY: TJW/DJK

SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS		ESCALATION		LABOR BASE		BENEFITS		LABOR INCLUDING PRODUCTIVITY					
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 7000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
												RATE	COST		M'HRS.	COST CODE 8000 TOTAL	
VESSELS															1.3		
110 - TOWERS - SHOP FABRICATED																	
150 - - FIELD FABRICATED																	
120 - REACTORS	4	2595 000							4560	10.70		2.17			5330	63450	12870
130 - DRUMS	17	649 000							2520	10.70		2.17			3280	35100	7120
-																	
110 - TRAYS - ALL																	
110 - PACKING - ALL																	
110 - PACKING SUPPORTS - ALL																	
110 - LININGS																	
-																	
180 - STORAGE TANKS - SHOP FAB.																	
180 - - FIELD FAB.																	
-																	
160 - PROCESS DUCTS																	
160 - TRANSFER LINES																	
-																	
210 - EXCHANGERS - S/T	4	31000							480	13.42		1.05			620	8320	650
220 - DOUBLE PIPE																	
230 - AIR FANS																	
-																	
240 - HEATERS	8	276 000							440	13.42		1.05			570	7650	600
240 - STACKS																	
-																	
250 - STEAM BOILERS																	
-																	
260 - COOLING TOWER																	
270 - VACUUM EQUIPMENT																	
280 - REFRIGERATION EQUIPMENT																	
290 - DEAERATORS																	
-																	
310 - PUMPS	8	29000							240	11.97		1.19			310	3710	370
320 - DRIVERS																	
320 - COMPRESSORS & DRIVERS																	
320 - BLOWERS																	
-																	
330 - ELECTRICAL GENERATOR																	
350 - FILTERS & SEPARATORS	2	26000							160	11.33		1.29			210	2380	270
350 - SOLIDS HANDLING EQUIPMENT (CYCLONES)	16	956 000							7600	11.33		1.29			9680	111 940	12750
370 - ROTARY COOLERS	4	577 000							680	11.33		1.29			880	9970	1140
390 - MIXERS & AGITATORS																	
-																	
910 - PACKAGE UNITS																	
-																	
-																	
SUB-TOTAL "A" EQUIPMENT		5139 000							16680						21680	242520	35770

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

NO. 15-2203
DATE _____
PREPARED BY TJW/JJK
SHEET NO. 2 OF 2

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MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER McGILL DOE NO. 15-2203
 LOCATION MEMPHIS TUN DATE 11-2-79
 SUBJECT SECTION 420- ZONE II PREPARED BY: AW
 SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
												RATE	COST		M'HRS	COST CODE 4000 TOTAL	
VESSELS	110 - TOWERS - SHOP FABRICATED																
	150 - FIELD FABRICATED																
	120 - REACTORS																
	130 - DRUMS																
	110 - TRAYS - ALL																
	110 - PACKING - ALL																
	110 - PACKING SUPPORTS - ALL																
	110 - LININGS																
	140 - STORAGE TANKS- SHOP FAB.																
	140 - FIELD FAB.																
HEAT TRANSFER	160 - PROCESS DUCTS																
	160 - TRANSFER LINES																
	210 - EXCHANGERS - S/T																
	220 - DOUBLE PIPE																
	230 - AIR FANS																
	240 - HEATERS																
	240 - STACKS																
	250 - STEAM BOILERS																
	260 - COOLING TOWER																
	270 - VACUUM EQUIPMENT																
MECH. EQUIP.	280 - REFRIGERATION EQUIPMENT																
	290 - DEAERATORS																
	310 - PUMPS																
	320 - DRIVERS																
	320 - COMPRESSORS & DRIVERS																
	320 - BLOWERS																
	330 - ELECTRICAL GENERATOR																
	340 - FILTERS & SEPARATORS																
	350 - SOLIDS HANDLING EQUIPMENT																
	390 - MIXERS & AGITATORS																
MISC.	910 - PACKAGE UNITS	380000							2700	11.33		1.29	1.3	3510	39770	4530	
SUB-TOTAL "A" EQUIPMENT		380000							2700						3510	39770	4530

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER MLK & DOE NO. 15-2203
 LOCATION MEMPHIS TENN DATE 11.2.75
 SUBJECT SECTION 420 - ZONE II PREPARED BY FWC
 SHEET NO. 21 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.	MATERIAL	SH. UNPAID	STANDARD M.HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	TOTAL LABOR M.HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK			-	54000	54000	2720								1.3			
410 - ROADS & FENCES																	
420 - PILING																	
430 - UNDERGROUND CONCRETE			181000	318000	499000	19660											
430 - CONCRETE - STRUCTURES																	
430 - - YARD RACK																	
430 - PAVING - ALL			6000	15900	21900	1000											
460 - STRUCTURAL STEEL - ALL		70000							2580	10.85		1.58			3350	36350	5900
480 - STEEL YARD RACK																	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
-																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING																	
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL																	
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING		148000							3520	13.42		1.05			4580	61460	4810
600 - - ELECTRICAL																	
700 - UNDERGROUND																	
700 - POWER-EQUIPMENT		19000							900	12.13		1.95			1170	14190	2280
700 - - DISTRIBUTION																	
700 - LIGHTING																	
700 - COMMUNICATIONS																	
-																	
700 - ELECTRIC TRACING																	
821 - INSULATION - PIPE																	
822 - INSULATION - EQUIPMENT																	
830 - PAINTING			1000	3000	4000	150											
840 - FIREPROOFING																	
900 - TESTING																	
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		237,000	188000	390900	578900	23570			7000						9100	112000	12390
TOTAL COSTS ("A" & "B")		617000	188000	390900	578900	23570			9700						12610	151770	16920

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

CATION MEMPHIS TENN.

DATE 11.16.79

SUBJECT ZONE III - SECTIONS 350 & 360 SUMMARY

PREPARED BY: TJW/DJK

SHEET NO 1 OF 2

A-EQUIPMENT			MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL		
												RATE	COST		M'HRS.	COST CODE 4000 TOTAL			
VESSELS	110 - TOWERS - SHOP FABRICATED	3	888000						3500	10.70		2.17		1.2	4200	44940	9110		
	130 - FIELD FABRICATED	7		1368000	1119000	2487000	56000												
	120 - REACTORS																		
	130 - DRUMS	11	578000						750	10.70		2.17			900	9630	1950		
	110 - TRAYS - ALL		483000						14810	10.70		2.17			17770	190140	38560		
	110 - PACKING - ALL	}	1557000																
	110 - PACKING SUPPORTS - ALL																		
	110 - LININGS																		
	140 - STORAGE TANKS - SHOP FAB.																		
	140 - FIELD FAB.																		
HEAT TRANSFER	160 - PROCESS DUCTS																		
	160 - TRANSFER LINES																		
	210 - EXCHANGERS - 3/4"	12	1028000						365	13.42		1.05			440	5900	460		
	220 - DOUBLE PIPE	1	3000						10	13.42		1.05			10	130	10		
	230 - AIR FANS	1	865000						3290	11.69		1.31			3950	46180	5170		
	240 - HEATERS																		
	240 - STACKS																		
	250 - STEAM BOILERS																		
	260 - COOLING TOWER																		
	270 - VACUUM EQUIPMENT																		
MECH. EQUIP.	370 - REFRIGERATION EQUIPMENT	1	1296000						2600	11.69		1.31			3120	36370	4090		
	290 - DEAERATORS																		
	290 - BRAZED CORE EXCHANGERS	3	1962000						630	11.69		1.31			760	8880	1000		
	310 - PUMPS	14	629000						1280	11.97		1.19			1530	18320	1820		
	380 - DRIVERS	12	748000						1200	11.97		1.19			1440	17240	1710		
	320 - COMPRESSORS & DRIVERS	5	4332000						10150	11.33		1.29			12180	138000	15710		
	320 - BLOWERS	2	12000						80	11.33		1.29			100	1130	130		
	330 - ELECTRICAL GENERATOR																		
	340 - FILTERS & SEPARATORS	2	26000						70	11.33		1.29			80	910	100		
	350 - SOLIDS HANDLING EQUIPMENT																		
MISC.	390 - MIXERS & AGITATORS																		
	910 - PACKAGE UNITS																		
	940 - GAS WASTE TREATMENT PHG.		15000						40	11.33		1.29			50	570	60		
SUB-TOTAL "A" EQUIPMENT			14422000	1368000	1119000	2487000	56000		52035						62440	688630	114400		

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W/DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11.10.79

SUBJECT GAS COMPRESSION - SECT 350 & 360 - TOWERS III

PREPARED BY T.J.W/JJK

SHEET NO. 2 OF 2

B. OTHER MATERIAL		MATERIALS		SUBCONTRACTS		ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				108000	108000	8200							1.2			
410 - TRENCHING FOR V6 PIPES				35000	35000	2660										
420 - PILING																
430 - UNDERGROUND CONCRETE - CY	3601		360800	829200	1190000	51300										
430 - CONCRETE - STRUCTURES																
430 - YARD RACK																
430 - PAVING - ALL			31000	120000	151000	7600										
460 - STRUCTURAL STEEL - ALL		333000						7910	10.85	158				9290	102970	14990
480 - STEEL YARD RACK		98000						2050	10.85	158				2440	26690	3890
470 - BUILDING (ROOFING MAT'L)			9600	6400	16000	320										
490 - TROLLEYS, CRANES, HOISTS	9	50000						230	10.11	1.24				280	2830	330
500 - VALVES																
500 - SHOP FABRICATED PIPING																
500 - LARGE O.D. PIPING		2802000						69670	13.42	1.05				83600	1,121,910	87780
500 - FIELD FABRICATED PIPING																
500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL		12000						3250	13.42	1.05				3900	52340	4100
600 - INSTRUMENT & SPECIALTIES																
600 - INSTRUMENT - PIPING		443000						9720	13.42	1.05				11660	156480	12240
600 - ELECTRICAL								4620	12.13	1.95				5540	67200	10800
700 - UNDERGROUND		52000						6900	12.13	1.95				8280	100440	16150
700 - POWER-EQUIPMENT		W/SECT 470														
700 - DISTRIBUTION		82000						6900	12.13	1.95				8280	100440	16150
700 - LIGHTING		35000						4620	12.13	1.95				5540	67200	10800
700 - COMMUNICATIONS																
700 - ELECTRIC TRACING																
Insulation - INSTR.			11300	26500	37800	1320										
821 - INSULATION - PIPE			110000	256000	366000	12800										
822 - INSULATION - EQUIPMENT			140000	263000	603000	23160										
830 - PAINTING			17100	96900	114000	4850										
840 - FIREPROOFING																
900 - TESTING		2000														
900 - CATALYST & CHEMICALS								4360	13.37	1.10				5230	69930	5750
900 - EQUIP. SHOP, LAB & OFFICE																
900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		3,466,000	679800	1741000	2420800	112210		120230						144260	1868430	183000
TOTAL COSTS ("A" & "B")		17,885,000	2047800	2860000	4907800	168210		172265						206700	2557110	297400

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G. W/DOE

NO. 15-2203

CATION MEMPHIS, TENN.

DATE 11-16-79

SUBJECT GAS COMPRESSION - SECT. 350 - ZONE III

PREPARED BY: TJW/DK

SHEET NO. 1 OF 1

PAGE NO. 430-100

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS																	
110 - TOWERS - SHOP FABRICATED														1.2			
150 - - FIELD FABRICATED																	
120 - REACTORS																	
130 - DRUMS	5	251000							380	10.70		2.17			460	4920	1000
110 - TRAYS - ALL																	
110 - PACKING - ALL																	
110 - PACKING SUPPORTS - ALL																	
110 - LININGS																	
140 - STORAGE TANKS- SHOP FAB.																	
140 - - FIELD FAB.																	
160 - PROCESS DUCTS																	
160 - TRANSFER LINES																	
210 - EXCHANGERS - S/T	6	519000							180	13.42		1.05			220	2950	230
220 - DOUBLE PIPE																	
230 - AIR FANS	1	865000							3290	11.69		1.31			3950	46180	5170
240 - HEATERS																	
240 - STACKS																	
250 - STEAM BOILERS																	
260 - COOLING TOWER																	
270 - VACUUM EQUIPMENT																	
280 - REFRIGERATION EQUIPMENT																	
290 - DEAERATORS																	
310 - PUMPS	2	16000							60	11.97		1.19			70	840	80
380 - DRIVERS																	
320 - COMPRESSORS & DRIVERS	5	4332000							10150	11.33		1.29			12160	138000	15710
320 - BLOWERS																	
330 - ELECTRICAL GENERATOR																	
340 - FILTERS & SEPARATORS																	
350 - SOLIDS HANDLING EQUIPMENT																	
390 - MIXERS & AGITATORS																	
910 - PACKAGE UNITS																	
SUB-TOTAL "A" EQUIPMENT		5983000							14060						16880	192890	22190

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W. DOE

NO. 15-2203

LOCATION MEMPHIS, TENN

DATE 11-16-79

SUBJECT GAS TREATING - SECT. 360 - ZONE III

PREPARED BY: T.W. J. J.

SHEET NO. 1 OF 1

A-EQUIPMENT	QTY	MATERIALS COST CODE 1000 TOTAL	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
			MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
												RATE	COST		M'HRS.	COST CODE 4000 TOTAL	
110 - TOWERS - SHOP FABRICATED	3	888 000							3500	10.70		2.17		1.2	4200	44940	9110
150 - FIELD FABRICATED	1		1368000	1119000	2487000	56000											
120 - REACTORS									370	10.70		2.17			440	4710	950
130 - DRUMS	6	327000							14810	10.70		2.17			17710	190140	38560
110 - TRAYS - ALL		483000							13260	10.70		2.17			15910	170240	34520
110 - PACKING - ALL																	
110 - PACKING SUPPORTS - ALL		1557000															
110 - LININGS																	
140 - STORAGE TANKS - SHOP FAB.																	
140 - FIELD FAB.																	
160 - PROCESS DUCTS																	
160 - TRANSFER LINES																	
210 - EXCHANGERS - S/T	6	509000							185	1342		1.05			220	2950	230
220 - DOUBLE PIPE	1	3000							10	1342		1.05			10	130	10
230 - AIR FANS																	
240 - HEATERS																	
240 - STACKS																	
250 - STEAM BOILERS																	
260 - COOLING TOWER																	
270 - VACUUM EQUIPMENT																	
370 - REFRIGERATION EQUIPMENT	1	1296000							2600	11.69		1.31			3120	36470	4060
290 - DEAERATORS									630	11.69		1.31			760	8880	1000
290 - BRAZED CORE EXCHANGERS	3	1962000							1220	11.97		1.19			1460	17480	1740
310 - PUMPS	12	613000							1200	11.97		1.19			1440	17240	1710
380 - DRIVERS		748000							80	11.33		1.29			100	1130	130
320 - COMPRESSORS & DRIVERS	2	12000							70	11.33		1.29			80	910	100
320 - BLOWERS																	
330 - ELECTRICAL GENERATOR																	
340 - FILTERS & SEPARATORS	2	26000															
350 - SOLIDS HANDLING EQUIPMENT																	
390 - MIXERS & AGITATORS																	
910 - PACKAGE UNITS																	
940 - GAS WASTE TREATMENT PKG.	1	15000							40	11.33		1.29			50	570	60
SUB-TOTAL "A" EQUIPMENT		8439000	1368000	1119000	2487000	56000			37975						45560	495790	92210

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE NO. 5-2203
 LOCATION MEMPHIS, TENN. DATE _____
 SUBJECT SOUR WATER STRIPPING - SECT. 370-2-NE IV PREPARED BY: FJW/JJK
 SHEET NO. 1 OF 2

A-EQUIPMENT			MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE		QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
													RATE	COST		M'HRS.	COST CODE 4000 TOTAL	
VESSELS	110 - TOWERS - SHOP FABRICATED	2	213000							280	10.70		2.17		1.2	320	3640	740
	150 - " - FIELD FABRICATED																	
	120 - REACTORS																	
	130 - DRUMS	1	27000							20	10.70		2.17			20	210	40
	"																	
	110 - TRAYS - ALL		41000							(SHOP INSTALLED)								
	110 - PACKING - ALL																	
	110 - PACKING SUPPORTS - ALL																	
	110 - LININGS																	
	"																	
HEAT TRANSFER	140 - STORAGE TANKS- SHOP FAB.																	
	140 - " - FIELD FAB.																	
	"																	
	160 - PROCESS DUCTS																	
	160 - TRANSFER LINES																	
	"																	
	210 - EXCHANGERS - S/T	5	145000							150	19.42		1.05			160	2420	190
	220 - DOUBLE PIPE																	
	230 - AIR FANS	1	155000							450	11.69		1.31			540	6310	710
	"																	
MECH. EQUIP.	240 - HEATERS																	
	240 - STACKS																	
	"																	
	250 - STEAM BOILERS																	
	"																	
	260 - COOLING TOWER																	
	270 - VACUUM EQUIPMENT																	
	280 - REFRIGERATION EQUIPMENT																	
	290 - DEAERATORS																	
	"																	
MISC.	310 - PUMPS	6	76000							200	11.97		1.19			240	2870	290
	380 - DRIVERS																	
	320 - COMPRESSORS & DRIVERS																	
	320 - BLOWERS																	
	"																	
	330 - ELECTRICAL GENERATOR																	
	340 - FILTERS & SEPARATORS																	
	350 - SOLIDS HANDLING EQUIPMENT																	
	"																	
	390 - MIXERS & AGITATORS																	
SUB-TOTAL "A" EQUIPMENT			657000							1100						1320	15450	1970

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE

SUBJECT SOUR WATER STRIPPING-SECTION-370

PREPARED BY TJW/JJK

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M*HRS.	MATERIAL	STANDARD M*HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M*HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL	
410 - EARTHWORK				16 000	16000	1200							1.2				
410 - TRENCHING FOR U/G PIPG.				2 000	2000	150											
420 - PILING																	
430 - UNDERGROUND CONCRETE	197 cy		26 000	82 000	108000	5070											
430 - CONCRETE - STRUCTURES																	
430 - YARD RACK																	
430 - PAVING - ALL			12 100	47900	60000	2990											
460 - STRUCTURAL STEEL - ALL		30000						720	10.85		1.58			840	9330	1360	
480 - STEEL YARD RACK		78000						1670	10.85		1.58			2040	22130	3220	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING		276000						11310	13.42		1.05			13570	182110	14250	
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL		7000						950	13.42		1.05			1140	15300	1200	
600 - INSTRUMENT & SPECIALTIES																	
600 - INSTRUMENT - PIPING		69000						3330	13.42		1.05			4000	53680	4200	
600 - ELECTRICAL								840	12.13		1.95			1010	12250	1970	
700 - UNDERGROUND		7000						1030	12.13		1.95			1240	15040	2420	
700 - POWER-EQUIPMENT		W SECT. 470															
700 - DISTRIBUTION		7000						930	12.13		1.95			1120	13590	2180	
700 - LIGHTING		29000						3270	12.13		1.95			3920	47550	7640	
700 - COMMUNICATIONS																	
700 - ELECTRIC TRACING																	
INSULATION INSTR.			7000	15000	22000	760											
821 - INSULATION - PIPE			22200	51800	74000	2390											
822 - INSULATION - EQUIPMENT			12800	29800	42600	1490											
830 - PAINTING			1200	6800	8000	340											
840 - FIREPROOFING																	
900 - TESTING		2000						790	13.39		1.14			950	12630	1080	
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		505 000	81 300	251 300	332 600	14590		24840						29850	383610	39520	
TOTAL COSTS ("A" & "B")		1162 000	81 300	251 300	332 600	14590		25940						31170	399060	41490	

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE NO. 15-2203
 LOCATION MEMPHIS, TENN. DATE _____
 SUBJECT SULFUR RECOVERY - SECTION 380 ZONE II PREPARED BY: TJW/SJK
 SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 8000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED													1.2			
	150 - FIELD FABRICATED																
	120 - REACTORS	1	326 000						460	10.70		2.17			550	3890	1190
	130 - DRUMS	4	14 000						60	10.70		2.17			70	750	150
	110 - TRAYS - ALL																
	110 - PACKING - ALL																
	110 - PACKING SUPPORTS - ALL																
	110 - LININGS																
	140 - STORAGE TANKS - SHOP FAB.																
	140 - FIELD FAB.	1	19 000	83600	68400	152 000	3420	(SHOP INSTALLED)									
HEAT TRANSFER	160 - PROCESS DUCTS																
	160 - TRANSFER LINES																
	210 - EXCHANGERS - S/T	9	631 000						220	13.42		1.05			260	3490	270
	220 - DOUBLE PIPE	1	11 000						40	13.42		1.05			50	670	50
	230 - AIR FANS																
	240 - HEATERS	1	143 000						120	13.42		1.05			140	1880	150
	240 - STACKS																
	250 - STEAM BOILERS																
	260 - COOLING TOWER																
	270 - VACUUM EQUIPMENT																
MECH. EQUIP.	280 - REFRIGERATION EQUIPMENT																
	290 - DEAERATORS																
	310 - PUMPS	6	24 000						180	11.97		1.19			210	2510	250
	380 - DRIVERS																
	320 - COMPRESSORS & DRIVERS																
	320 - BLOWERS	2	190 000						640	11.33		1.29			770	8720	990
	330 - ELECTRICAL GENERATOR																
	340 - FILTERS & SEPARATORS																
	350 - SOLIDS HANDLING EQUIPMENT																
	390 - MIXERS & AGITATORS																
MISC.	910 - PACKAGE UNITS																
SUB-TOTAL "A" EQUIPMENT		1,358,000	83600	68400	152 000	3420			1720						2050	23910	3050

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE

SUBJECT SULFUR RECOVERY - SECTION 380 ZONE V

PREPARED BY TJW/JJK

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				27000	27000	2090							1.2			
410 - TRENCHING FOR UG PIPE				9000	9000	670										
420 - PILING																
430 - UNDERGROUND CONCRETE			59200	183000	242200	11310										
430 - CONCRETE - STRUCTURES																
430 - - YARD RACK																
430 - PAVING - ALL			6700	24300	33000	1680										
460 - STRUCTURAL STEEL - ALL		58000						1410	10.85		1.58			1690	18340	2670
480 - STEEL YARD RACK		33000						970	10.85		1.58			1160	12590	1830
470 - BUILDING																
490 - TROLLEYS, CRANES, HOISTS																
500 - VALVES																
500 - SHOP FABRICATED PIPING																
500 - LARGE O.D. PIPING		497000						26810	13.42		1.05			32170	431720	33780
500 - FIELD FABRICATED PIPING																
500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL		5000						980	13.42		1.05			1180	15840	1240
600 - INSTRUMENT & SPECIALTIES																
600 - INSTRUMENT - PIPING		211000						7790	13.42		1.05			9350	125480	9820
600 - - ELECTRICAL																
700 - UNDERGROUND		12000						2060	12.13		1.95			2470	29960	4820
700 - POWER EQUIPMENT		W 5667 470														
700 - DISTRIBUTION		9000						1500	12.13		1.95			1800	21830	3510
700 - LIGHTING		21000						2520	12.13		1.95			3020	36630	5890
700 - COMMUNICATIONS																
700 - ELECTRIC TRACING																
821 - INSULATION - PIPE			43500	101500	145000	5080										
822 - INSULATION - EQUIPMENT																
830 - PAINTING			3600	20400	24000	1020										
840 - FIREPROOFING																
900 - TESTING		1000						1650	13.42		1.05			1980	26570	2080
900 - CATALYST & CHEMICALS																
900 - EQUIP. SHOP, LAB & OFFICE																
900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		847000	113000	367200	480200	21650		45690						54820	718960	65640
TOTAL COSTS ("A" & "B")		2,205,000	196600	435600	632200	25270		47410						56870	742,870	68690

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE

SUBJECT AIR SEPARATION, SECTION 310-ZONE VI

PREPARED BY: TJW/LJK

SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
110 - TOWERS - SHOP FABRICATED													1.2			
150 - - FIELD FABRICATED																
120 - REACTORS																
130 - DRUMS	5	203000							370	10.70		2.17		440	4710	960
110 - TRAYS - ALL																
110 - PACKING - ALL																
110 - PACKING SUPPORTS - ALL																
110 - LININGS																
140 - STORAGE TANKS - SHOP FAB.																
140 - - FIELD FAB.	2	(WITH PKG. UNITS)														
160 - PROCESS DUCTS																
160 - TRANSFER LINES																
210 - EXCHANGERS - S/T	9	728000							1190	1342		1.05		1430	19190	1500
220 - DOUBLE PIPE																
230 - AIR FANS																
240 - HEATERS																
240 - STACKS																
250 - STEAM BOILERS																
260 - COOLING TOWER																
270 - VACUUM EQUIPMENT																
280 - REFRIGERATION EQUIPMENT																
290 - DEAERATORS																
310 - PUMPS																
320 - DRIVERS																
320 - COMPRESSORS & DRIVERS	5	5625000							7220	11.33		1.29		8660	98120	11170
320 - BLOWERS																
330 - ELECTRICAL GENERATOR																
340 - FILTERS & SEPARATORS																
350 - SOLIDS HANDLING EQUIPMENT																
390 - MIXERS & AGITATORS AIR FILTER	27	135000							360	11.33		1.29		430	4870	560
- SILENCER	65															
910 - PACKAGE UNITS	4		11176000	5847000	17023000	233000										
SUB-TOTAL "A" EQUIPMENT		6691000	11176000	5847000	17023000	233000			9140					10960	126890	14190

FORM NO. 130-101C

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER *M.L.G.W/DOE*

LOCATION MEMPHIS, TENN

SUBJECT AIR SEPARATION - SECTION 310 - ZONE VI

NO. 15,2209

DATE _____

PREPARED BY TJW/JJK
SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR ACCORDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	N' HPS.	MATERIAL	SH. D. UNPAID	STANDARD N' HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	N' HPS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				88000	88000	6720								1.2			
410 - TRENCHING FOR U/G PIPES				18000	18000	900											
420 - PILING																	
430 - UNDERGROUND CONCRETE			305000	575000	900000	36600											
430 - CONCRETE - STRUCTURES																	
430 - YARD RACK																	
430 - PAVING - ALL			24000	95000	119000	5840											
460 - STRUCTURAL STEEL - ALL		212000							5920	10.85		1.58			7100	77010	11220
480 - STEEL YARD RACK		72000							1550	10.85		1.58			1660	20180	2940
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS	3	7500							90	10.11		1.24			110	1110	140
-																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING		1930000							40690	13.42		1.05			4EE30	655300	51270
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL		11000							2240	13.42		1.05			2690	36100	2820
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING		133000							2390	13.42		1.05			2E70	38520	3010
600 - ELECTRICAL									2240	12.13		1.95			2640	32020	5150
700 - UNDERGROUND		18000							2350	12.13		1.95			2E20	34210	5500
700 - POWER EQUIPMENT		W&ECT 470															
700 - DISTRIBUTION		21000							1230	12.13		1.95			1450	17950	2690
700 - LIGHTING		59000							8120	12.13		1.95			9740	118150	18990
700 - COMMUNICATIONS																	
-																	
700 - ELECTRIC TRACING																	
INSULATION - INSTR.			2000	6000	8000	300											
821 - INSULATION - PIPE			57600	134400	192000	6720											
822 - INSULATION - EQUIPMENT		(No insulation required)															
830 - PAINTING			20500	16500	137000	5830											
840 - FIREPROOFING																	
900 - TESTING		1000															
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		2464500	4409100	1052900	1462000	62910			69520						83350	1073900	101400
TOTAL COSTS ("A" & "B")		9155500	11585100	6899900	18485000	275910			78660						94340	1200790	121590

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L. R. W. / DOE

NO. 15-2203

LOCATION MS. 4447, TENN.

DATE 11.16.79

SUBJECT CH-LET GENERATION - SECTION 220 - ZONE VII

PREPARED BY: TSW/DJB

SHEET NO. 1 OF 2

	A-EQUIPMENT		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
	COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.		MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED	2	521000								1670	10.70		2.17		1.2	2600	21400	4340
	150 - FIELD FABRICATED																		
	120 - REACTORS	7	652000								570	10.70		2.17			710	7560	1640
	130 - DRUMS	8	171000								250	10.70		2.17			300	3210	650
	110 - TRAYS - ALL		17000								SHOP INSTALLED								
	110 - PACKING - ALL		331000								3250	10.70		2.17			3700	41730	8460
	110 - PACKING SUPPORTS - ALL																		
	110 - LININGS																		
	140 - STORAGE TANKS - SHOP FAB.	1	5000								70	10.70		2.17			80	860	170
	140 - FIELD FAB.	1		24200	19800	44000	1000												
HEAT TRANSFER	160 - PROCESS DUCTS																		
	160 - TRANSFER LINES																		
	210 - EXCHANGERS - S/T	11	678000								475	13.42		1.05			570	7650	600
	220 - DOUBLE PIPE	2	35000								50	13.42		1.05			60	810	60
	230 - AIR FANS																		
	240 - HEATERS	2	94000								300	13.42		1.05			360	4830	380
	240 - STACKS																		
	250 - STEAM BOILERS																		
	260 - COOLING TOWER																		
	270 - VACUUM EQUIPMENT (EJECTORS)	4	72000								160	13.42		1.05			190	2550	200
MECH. EQUIP.	280 - MUTE HEAT EXCHANGERS	5	368000								690	13.42		1.05			830	11140	870
	290 - DESUPERHEATER & COOLER	2	21000								50	13.42		1.05			60	810	60
	310 - PUMPS	13	314000								600	11.97		1.19			720	8620	860
	320 - DRIVERS	15	185000								425	11.97		1.19			510	6100	610
	320 - COMPRESSORS & DRIVERS	5	363200								1125	11.33		1.29			13480	152730	17390
	320 - BLOWERS																		
	315 -	2	6000								60	11.33		1.29			70	790	90
	330 - ELECTRICAL GENERATOR																		
	340 - FILTERS & SEPARATORS	1	1000								20	11.33		1.29			20	230	30
	350 - SOLIDS HANDLING EQUIPMENT																		
MISC.	390 - MIXERS & AGITATORS	1	3000								20	11.33		1.29			20	230	30
	910 - PACKAGE UNITS	3	552000								610	11.33		1.29			730	8270	940
	SUB-TOTAL "A" EQUIPMENT		7,691,000	24,200	19,800	44,000	1000				29,525						24610	279520	37280

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11.16.79

SUBJECT CREDIT GENERATION - SECTION 220-2045 VII

PREPARED BY TJW/LX

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE				BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.		MATERIAL	SL-B-UMPA	STANDARD M.HRS	LABOR RATE	PAYROLL		COST CODE 7100 RATE	COST	PROD. FACTOR	M.HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				77000	77000	5870										1.2			
410 - TRENCHING FOR U/B PIPE				24000	24000	1820													
420 - PILING																			
430 - UNDERGROUND CONCRETE			228600	497,400	726,000	31980													
430 - CONCRETE - STRUCTURES																			
430 - - YARD RACK																			
430 - PAVING - ALL			30,000	118,000	148,000	7500													
460 - STRUCTURAL STEEL - ALL		197000								4780	10.85		1.58				5740	62280	9010
480 - STEEL YARD RACK		87000								1820	10.85		1.58				2160	23650	3440
470 - BUILDING																			
490 - TROLLEYS, CRANES, HOISTS	1	45000								170	9.34		1.04				200	1870	210
500 - VALVES																			
500 - SHOP FABRICATED PIPING																			
500 - LARGE O.D. PIPING		1680000								49790	13.42		1.05				59150	801850	62740
500 - FIELD FABRICATED PIPING																			
500 - SPECIALTIES																			
500 - UNDERGROUND PIPING - ALL		12000								2670	13.42		1.05				3200	42940	3360
600 - INSTRUMENT & SPECIALTIES																			
600 - INSTRUMENT - PIPING		747000								12170	13.42		1.05				14600	195930	15330
600 - - ELECTRICAL										8290	12.13		1.95				6350	77030	12380
700 - UNDERGROUND		39000								4490	12.13		1.95				5990	72660	11680
700 - POWER-EQUIPMENT		W/SECT. 470																	
700 - DISTRIBUTION		47000								4530	12.13		1.95				5440	65990	10610
700 - LIGHTING		46000								5330	12.13		1.95				6400	77630	12480
700 - COMMUNICATIONS																			
700 - ELECTRIC TRACING																			
INSTRUMENT INSULATION			7200	16800	24000	840													
821 - INSULATION - PIPE			120,900	282,100	403,000	14100													
822 - INSULATION - EQUIPMENT			84100	210,800	295,000	13200													
830 - PAINTING			9600	38400	64000	2720													
840 - FIREPROOFING																			
900 - TESTING		1000								3300	13.36		1.09				3960	52910	4320
900 - CATALYST & CHEMICALS																			
900 - EQUIP. SHOP, LAB & OFFICE																			
900 - FIRE PROTECTION & SAFETY																			
SUBTOTAL "B" OTHER MATERIAL		2,901,000	480,400	1,280,600	1,761,000	76030				94,840							113810	1474740	145620
TOTAL COSTS ("A" & "B")		10,592,000	504,600	1,300,400	1,805,000	77030				115,365							138420	1754260	182900

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M I G W / DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11-2-79

SUBJECT SECTION 420 - ZONE VIII

PREPARED BY: TJW

SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY				
COST CODE		QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 1100		PROD. FACTOR	LABOR		BENEFIT TOTAL
													RATE	COST		M'HRS	COST CODE 8000 TOTAL	
VESSELS	110 - TOWERS - SHOP FABRICATED																	
	150 - - FIELD FABRICATED																	
	120 - REACTORS																	
	130 - DRUMS																	
	-																	
	110 - TRAYS - ALL																	
	110 - PACKING - ALL																	
	110 - PACKING SUPPORTS - ALL																	
	110 - LININGS																	
	-																	
140 - STORAGE TANKS- SHOP FAB.																		
	140 - - FIELD FAB.																	
	-																	
160 - PROCESS DUCTS																		
	160 - TRANSFER LINES																	
HEAT TRANSFER	210 - EXCHANGERS - S/T																	
	220 - DOUBLE PIPE																	
	230 - AIR FANS																	
	-																	
	240 - HEATERS																	
	240 - STACKS																	
	-																	
	250 - STEAM BOILERS																	
	-																	
	260 - COOLING TOWER																	
MECH. EQUIP.	270 - VACUUM EQUIPMENT																	
	280 - REFRIGERATION EQUIPMENT																	
	290 - DEAERATORS																	
	-																	
	310 - PUMPS																	
	320 - DRIVERS																	
	320 - COMPRESSORS & DRIVERS																	
	320 - BLOWERS																	
	-																	
	330 - ELECTRICAL GENERATOR																	
MISC.	340 - FILTERS & SEPARATORS																	
	350 - SOLIDS HANDLING EQUIPMENT																	
	-																	
	390 - MIXERS & AGITATORS																	
	-																	
	910 - PACKAGE UNITS		1,910,000							13,430	11.33		1.29		1.2	16,120	182,640	20,800
	-																	
	-																	
	-																	
	SUB-TOTAL "A" EQUIPMENT				1,910,000					13,430							16,120	182,640

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER MICHIGAN

LOCATION MEMPHIS, TENN

SUBJECT SECTION 420 - ZONE VIII

NO. 15-2203

DATE 11-2-79

PREPARED BY JW

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M' HRS.	MATERIAL	STANDARD M' HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M' HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK			-	11000	11000	810										
410 - ROADS & FENCES																
420 - PILING																
430 - UNDERGROUND CONCRETE			40000	42000	82000	2600										
430 - CONCRETE - STRUCTURES																
430 - YARD RACK																
430 - PAVING - ALL																
460 - STRUCTURAL STEEL - ALL																
480 - STEEL YARD RACK																
470 - BUILDING																
490 - TROLLEYS, CRANES, HOISTS																
500 - VALVES																
500 - SHOP FABRICATED PIPING																
500 - LARGE O.D. PIPING																
500 - FIELD FABRICATED PIPING																
500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL																
600 - INSTRUMENT & SPECIALTIES																
500 - INSTRUMENT - PIPING																
600 - ELECTRICAL																
700 - UNDERGROUND																
700 - POWER-EQUIPMENT																
700 - DISTRIBUTION																
700 - LIGHTING																
700 - COMMUNICATIONS																
700 - ELECTRIC TRACING																
821 - INSULATION - PIPE																
822 - INSULATION - EQUIPMENT																
830 - PAINTING			3000	16000	19000	800										
840 - FIREPROOFING																
900 - TESTING																
900 - CATALYST & CHEMICALS																
900 - EQUIP. SHOP, LAB & OFFICE																
900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		96,000	43000	69000	112000	4210		4300						5,160	62,590	10,060
TOTAL COSTS ("A" & "B")		2,006,000	43000	69000	112000	4210		17,730						21,280	245,230	30,860

WITH PKG.

WITH PKG.

INCL. W/ ZONE II

(INCL. WITH ZONE II)

4300 17.13

1.95

1.2

5,160

62,590

10,060

(LESS THAN 110 M' HRS)

MATERIALS, SUBCONTRACTS, & LABOR COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.S.W. / DOE NO. 15-2203
 LOCATION MEMPHIS, TENN. DATE 11.16.78
 SUBJECT SECTION 430 ZONE IX PREPARED BY: TJW
 SHEET NO. 1 OF 1

	MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
	COST CODE 1000 TOTAL	MISCELL	LABOR	COST CODE 7000 TOTAL	N° NOS.	MATERIALS	SUBCONTRACT	STANDARD N° NOS.	LABOR RATE	PAYROLL	COST CODE 3100 RATE	COST	P.W. FACTOR	TOTAL LABOR N° NOS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
CLARIFIER	60000													540	6260	670
FLUE GAS DESULFURIZATION				5305000												
DEMINERALIZER	1257000			350000										3090	34720	4280
INCINERATOR	899400			293000										1090	83460	9970
FLY ASH	2868000			1063000										28480	333520	62170
STEAM GENERATOR	983000			10484600										16310	197280	2760
RAW WTR. FIREWTR. PRETREAT.	181000			320000										1030	12210	1810
BALANCE AREA	2367000			1409400										106500	1387710	46060
TESTING & PAINTING	2000			140000										4920	63430	5510
	8497400			19367000										166890	2123000	223580

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP. 100 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER McLEW/Dot NO. 15-2203
LOCATION MEMPHIS TENN DATE 11.2.79
SUBJECT SECTION 430 - ZONE IX GRAD SUMMARY PREPARED BY: 181
SHEET NO 11 OF 2

PUMP NO. 130-1001

	A-EQUIPMENT	QTY	MATERIALS COST CODE 1000 TOTAL	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
				MATERIAL	LABOR	COST CODE 2000 TOTAL	M' HRS.	MATERIAL	SUBCONTRACT	STANDARD M' HRS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
													RATE	COST		M' HRS.	COST CODE 8000 TOTAL	
VESSELS	110 - TOWERS - SHOP FABRICATED														1.2			
	150 - - FIELD FABRICATED																	
	120 - REACTORS																	
	130 - DRUMS	4	38000							140	10.70		2.17			170	1820	370
	110 - TRAYS - ALL																	
	110 - PACKING - ALL																	
	110 - PACKING SUPPORTS - ALL																	
	110 - LININGS																	
	140 - STORAGE TANKS - SHOP FAB.	2	52000							300	10.70		2.17			360	3850	780
	140 - - FIELD FAB.	3		366000	304000	670000	15200											
HEAT TRANSFER	160 - PROCESS DUCTS		1439000	151000	281000	432000	14000			7920	10.70		2.17			9500	101650	20620
	160 - TRANSFER LINES																	
	210 - EXCHANGERS - S/T	1	11000							30	13.42		1.05			40	540	40
	220 - DOUBLE PIPE																	
	230 - AIR FANS																	
	240 - HEATERS																	
	240 - STACKS																	
	250 - STEAM BOILERS	2		6000000	4000000	10000000	108000											
	260 - COOLING TOWER																	
	270 - VACUUM EQUIPMENT																	
MECH. EQUIP.	280 - REFRIGERATION EQUIPMENT																	
	290 - DEAERATORS																	
	310 - PUMPS	22	312000							1030	11.97		1.19			1240	14840	1480
	380 - DRIVERS	22	116000							780	11.97		1.19			930	11250	1120
	320 - COMPRESSORS & DRIVERS																	
	315 - PHOSPHATE PEG	1	11000							20	11.33		1.29			20	230	30
	315 - INJECTION PKGS	2	9000							40	11.33		1.29			50	570	60
	330 - ELECTRICAL GENERATOR																	
	340 - FILTRERS & SEPARATORS																	
	350 - SOLIDS HANDLING EQUIPMENT	2	549000							1570	11.33		1.29			1880	21300	2430
MISC.	360 - MATERIAL TRANSPORT	5	754000	348000	285000	633000	14750			1250	11.33		1.29			1500	17000	1940
	390 - MIXERS & AGITATORS																	
	910 - PACKAGE UNITS	3	1664000	3730000	1575000	5305000	79000			4000	11.33		1.29			4600	54380	6190
	920 - STAILC	1		176000	117000	293000	5850			60	10.70		2.17			70	750	150
	930 -	2	119000							410	11.33		1.29			490	5550	630
	SUB-TOTAL "A" EQUIPMENT		5074000	10771000	6562000	17333000	236300			17550						21060	233730	35840

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W/DOE

LOCATION MEMPHIS, TENN.

SUBJECT SECTION 430 - ZONE IX GRAND SUMMAY

NO. 15-2203

DATE 11-2-79

PREPARED BY LW/LWK

SHEET NO. 2 OF 2

	B: OTHER MATERIAL	COST CODE 1000 TOTAL	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
			MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.	MATERIAL	SALES/UNIT/PAID	STANDARD M.HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	TOTAL LABOR M.HRS.	COST CODE #000 TOTAL	BENEFIT TOTAL
CIVIL	810 - EARTHWORK			110000	110000	8390								1.2			
	810 - ROADS & FENCES			33200	33200	2520											
	820 - PILING																
	830 - UNDERGROUND CONCRETE		297100	843200	1140300	59970											
	830 - CONCRETE - STRUCTURES		2000	4000	6000	250											
	830 - - YARD RACK																
	830 - PAVING - ALL		57200	216300	273500	13680											
	860 - STRUCTURAL STEEL - ALL	141000							3860	10.85		1.58			4630	50240	7320
	880 - STEEL YARD RACK	242000							4540	10.85		1.58			5450	59130	8610
	870 - BUILDING																
PIPING	890 - TROLLEYS, CRANES, HOISTS																
	500 - VALVES																
	500 - SHOP FABRICATED PIPING																
	500 - LARGE O.D. PIPING	1532000							60750	13.42		1.05			72900	978320	76550
	500 - FIELD FABRICATED PIPING																
	500 - SPECIALTIES																
	500 - UNDERGROUND PIPING - ALL	29000							3280	13.42		1.05			3940	52870	4140
	500 - UNDERGROUND FIREWATER	6000							400	13.42		1.05			450	6480	500
	600 - INSTRUMENT & SPECIALTIES																
	600 - INSTRUMENT - PIPING	797000							17810	13.42		1.05			21370	286790	22440
ELECTRICAL	600 - - ELECTRICAL								2240	12.13		1.95			2690	32630	5250
	600 - CONTROL ROOM INSTR.	168000							1490	12.13		1.95			1790	21710	3490
	700 - UNDERGROUND	14000							2590	12.13		1.95			3110	87720	6060
	700 - POWER-EQUIPMENT	W/SECT. 470															
	700 - DISTRIBUTION	15000							1840	12.13		1.95			2210	26810	4310
	700 - LIGHTING	426000							7120	12.13		1.95			8540	103590	16650
	700 - COMMUNICATIONS	62000							11500	12.13		1.95			13800	167390	26910
	700 - ELECTRIC TRACING																
MISCELLANEOUS	821 - INSULATION - PIPE		85000	200000	285000	10000											
	822 - INSULATION - EQUIPMENT		15000	31000	46000	1560											
	830 - PAINTING		21000	119000	140000	5950											
	840 - FIREPROOFING																
	900 - TESTING	2000							4100	13.34		1.12			4920	65630	5510
	900 - CATALYST & CHEMICALS																
	900 - EQUIP. SHOP, LAB & OFFICE																
	900 - FIRE PROTECTION & SAFETY																
	SUBTOTAL "B" OTHER MATERIAL	3431000	477300	155670	2034000	102320			121520						145830	1889270	187740
	TOTAL COSTS ("A" & "B")	8497400	11248300	8118700	19367000	336820			139070						166890	2123000	223580

MATERIALS, SUBCONTRACTS, & LABOR COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G. W/DOE

LOCATION MEMPHIS, TENN.

SUBJECT SECTION - 430 CLARIFIER - ZONE IX

NO. 15-2203

DATE 11-2-79

PREPARED BY: ZUN/LUX

SHEET NO. 1 OF 1

A-EQUIPMENT		MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
110 - TOWERS - SHOP FABRICATED														1.2			
150 - - FIELD FABRICATED																	
120 - REACTORS																	
130 - DRUMS																	
110 - TRAYS - ALL																	
110 - PACKING - ALL																	
110 - PACKING SUPPORTS - ALL																	
110 - LININGS																	
140 - STORAGE TANKS - SHOP FAB.																	
140 - - FIELD FAB.																	
160 - PROCESS DUCTS																	
160 - TRANSFER LINES																	
210 - EXCHANGERS - S/T																	
220 - DOUBLE PIPE																	
230 - AIR FANS																	
240 - HEATERS																	
240 - STACKS																	
250 - STEAM BOILERS																	
260 - COOLING TOWER																	
270 - VACUUM EQUIPMENT																	
280 - REFRIGERATION EQUIPMENT																	
290 - DEAERATORS																	
310 - PUMPS	6	14000							180	11.97		1.19			220	2,630	260
380 - DRIVERS	6	3000							11.97								
320 - COMPRESSORS & DRIVERS																	
320 - BLOWERS																	
330 - ELECTRICAL GENERATOR																	
340 - FILTERS & SEPARATORS																	
350 - SOLIDS HANDLING EQUIPMENT																	
390 - MIXERS & AGITATORS																	
910 - PACKAGE UNITS																	
430 - CLARIFIER Pkg. A-11312	1	43000							270	11.33		1.25			320	3,630	410
SUB-TOTAL "A" EQUIPMENT		60000							450						540	6,260	670

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP. 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE 11-2-79

SUBJECT SECTION - 430 FLUE GAS

PREPARED BY: TW/DJK

DESULFURIZATION - ZONE IX

SHEET NO. 1 OF 1

A-EQUIPMENT		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 3100 RATE	COST CODE 3100 COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL	
VESSELS	110 - TOWERS - SHOP FABRICATED																	
	150 - - FIELD FABRICATED																	
	120 - REACTORS																	
	130 - DRUMS																	
	-																	
	110 - TRAYS - ALL																	
	110 - PACKING - ALL																	
	110 - PACKING SUPPORTS - ALL																	
	110 - LININGS																	
	-																	
HEAT TRANSFER	180 - STORAGE TANKS - SHOP FAB.																	
	180 - - FIELD FAB.																	
	-																	
	160 - PROCESS DUCTS																	
	160 - TRANSFER LINES																	
	-																	
	210 - EXCHANGERS - S/T																	
	220 - DOUBLE PIPE																	
	230 - AIR FANS																	
	-																	
MECH. EQUIP.	240 - HEATERS																	
	240 - STACKS																	
	-																	
	250 - STEAM BOILERS																	
	-																	
	260 - COOLING TOWER																	
	270 - VACUUM EQUIPMENT																	
	280 - REFRIGERATION EQUIPMENT																	
	290 - DEAERATORS																	
	-																	
MISC.	310 - PUMPS																	
	320 - DRIVERS																	
	320 - COMPRESSORS & DRIVERS																	
	320 - BLOWERS																	
	-																	
	330 - ELECTRICAL GENERATOR																	
	340 - FILTERS & SEPARATORS																	
	350 - SOLIDS HANDLING EQUIPMENT																	
	-																	
	390 - MIXERS & AGITATORS																	
910 - PACKAGE UNITS FMC																		
- DESULFURIZATION	1		3730000	1575000	5305000	79000												
SUB-TOTAL "A" EQUIPMENT					3730000	1575000	5305000	79000										

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G. W/DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11-2-79

SUBJECT SECTION 430 DEMINERALIZER

PREPARED BY: TJW/JJK

ZONE IX

SHEET NO. 1 OF 1

	A-EQUIPMENT	MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
			MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED													1.2			
	150 - " - FIELD FABRICATED																
	120 - REACTORS																
	130 - DRUMS	2	32000						100	10.70		2.17			20	1280	260
	110 - TRAYS - ALL																
	110 - PACKING - ALL																
	110 - PACKING SUPPORTS - ALL																
	110 - LININGS																
	140 - STORAGE TANKS - SHOP FAB.	2	52000						300	10.70		2.17			360	3850	780
	140 - " - FIELD FAB.	2		190000	160000	350000	8000										
HEAT TRANSFER	160 - PROCESS DUCTS																
	160 - TRANSFER LINES																
	210 - EXCHANGERS - S/T	1	11000						30	13.42		1.05			40	540	40
	220 - DOUBLE PIPE																
	230 - AIR FANS																
	240 - HEATERS																
	240 - STACKS																
	250 - STEAM BOILERS																
	260 - COOLING TOWER																
	270 - VACUUM EQUIPMENT																
MECH. EQUIP.	280 - REFRIGERATION EQUIPMENT																
	290 - DEAERATORS																
	310 - PUMPS	8	124000						360	11.97		1.19			430	5150	510
	380 - DRIVERS	8	106000						420	11.97		1.19			500	5990	600
	320 - COMPRESSORS & DRIVERS																
	320 - BLOWERS																
	315 - INJECTION PACKAGES	2	9000						40	11.33		1.29			50	570	70
	330 - ELECTRICAL GENERATOR																
	340 - FILTERS & SEPARATORS																
	350 - SOLIDS HANDLING EQUIPMENT																
MISC.	390 - MIXERS & AGITATORS																
	910 - PACKAGE UNITS - DEMIN. PKG.	1	847000						1130	11.33		1.29			1360	15410	1750
	930 - " " DEAERATOR	1	76000						140	11.33		1.29			170	1930	220
	SUB-TOTAL "A" EQUIPMENT		1257000	190000	160000	350000	8000		2520						3030	34,720	4230

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W. DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE 11.2.79

SUBJECT SECTION 430 INCINERATOR ZONE IX

PREPARED BY: TJW/JWK

SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 8000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED															
	150 - - FIELD FABRICATED															
	120 - REACTORS															
	130 - DRUMS															
	-															
	110 - TRAYS - ALL															
	110 - PACKING - ALL															
	110 - PACKING SUPPORTS - ALL															
	110 - LININGS															
	-															
HEAT TRANSFER	140 - STORAGE TANKS - SHOP FAB.															
	140 - - FIELD FAB.															
	-															
	160 - PROCESS DUCTS															
	160 - TRANSFER LINES															
	-															
	210 - EXCHANGERS - S/T															
	220 - DOUBLE PIPE															
	230 - AIR FANS															
	-															
MECH. EQUIP.	240 - HEATERS															
	240 - STACKS															
	-															
	250 - STEAM BOILERS															
	-															
	260 - COOLING TOWER															
	270 - VACUUM EQUIPMENT															
	280 - REFRIGERATION EQUIPMENT															
	290 - DEAERATORS															
	-															
MISC.	310 - PUMPS															
	320 - DRIVERS															
	320 - COMPRESSORS & DRIVERS															
	320 - BLOWERS															
	-															
	330 - ELECTRICAL GENERATOR															
	340 - FILTERS & SEPARATORS															
	350 - SOLIDS HANDLING EQUIPMENT															
	-															
	390 - MIXERS & AGITATORS															
MISC.	910 - PACKAGE UNITS INCINERATOR	1	817 000						2870	11.33		1.25	1.2	3440	38,980	4440
	920 - STACK	1		176 000	117 000	293 000	5850		60	14.70		2.17	1.2	70	750	150
SUB-TOTAL "A" EQUIPMENT			817 000	176 000	117 000	293 000	5850	-	-	2930				3,510	39,730	4,590

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP. 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER MLGW DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11.2.79

SUBJECT SECTION 430 INCINERATOR - ZONE IX

PREPARED BY TUN

SHEET NO. 2 OF 2

B. OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HS.	MATERIAL	SL 6-UMPR	STANDARD M'HS	LABOR RATE	PAYROLL	COST CODE 7100		PROD. FACTOR	TOTAL LABOR		BENEFIT TOTAL
												RATE	COST		M'HS.	COST CODE 4000 TOTAL	
410 - EARTHWORK																	
410 - ROADS & FENCES																	
420 - PILING																	
430 - UNDERGROUND CONCRETE																	
430 - CONCRETE - STRUCTURES																	
430 - - YARD RACK																	
430 - PAVING - ALL																	
460 - STRUCTURAL STEEL - ALL																	
480 - STEEL YARD RACK																	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING																	
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL																	
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING		12400							1480	15.42		105		1.2	1780	23890	1870
600 - - ELECTRICAL																	
700 - UNDERGROUND																	
700 - POWER EQUIPMENT																	
700 - DISTRIBUTION																	
700 - LIGHTING		12000							1500	12.13		1.95		1.2	1800	21830	3510
700 - COMMUNICATIONS																	
700 - ELECTRIC TRACING																	
821 - INSULATION - PIPE																	
822 - INSULATION - EQUIPMENT																	
830 - PAINTING																	
840 - FIREPROOFING																	
900 - TESTING																	
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		22400							2980						3580	45720	5380
TOTAL COSTS ("A" & "B")		839400	176000	117000	293000	5850			5910						7090	85450	9970

100 100 100 100 100

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE NO. 15-2203
 LOCATION MEMPHIS TENN. DATE 11.2.79
 SUBJECT SECTION 430 FLY ASH 20NE TX PREPARED BY: TJW/LJK
 SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE COST	PROD. FACTOR	TOTAL LABOR M'HRS.	COST CODE 8000 TOTAL	BENEFIT TOTAL
110 - TOWERS - SHOP FABRICATED													1.2			
150 - - FIELD FABRICATED																
120 - REACTORS																
130 - DRUMS																
110 - TRAYS - ALL																
110 - PACKING - ALL																
110 - PACKING SUPPORTS - ALL																
110 - LININGS																
140 - STORAGE TANKS - SHOP FAB.																
140 - - FIELD FAB.																
160 - PROCESS DUCTS	LOT	1439 000	151 000	281 000	432 000	14000			7420	1070		2.17		9500	101650	20620
160 - TRANSFER LINES																
210 - EXCHANGERS - S/T																
220 - DOUBLE PIPE																
230 - AIR FANS																
240 - HEATERS																
240 - STACKS																
250 - STEAM BOILERS																
260 - COOLING TOWER																
270 - VACUUM EQUIPMENT																
280 - REFRIGERATION EQUIPMENT																
290 - DEAERATORS																
310 - PUMPS																
380 - DRIVERS																
320 - COMPRESSORS & DRIVERS																
320 - BLOWERS																
330 - ELECTRICAL GENERATOR																
340 - FILTERS & SEPARATORS																
350 - SOLIDS HANDLING EQUIPMENT	2	549 000							1570	11.33		1.29		1880	21300	2430
360 - MATERIAL TRANSPORT	5	754 000	348 000	285 000	633 000	4250			1250	11.33		1.29		1500	16700	1940
390 - MIXERS & AGITATORS																
910 - PACKAGE UNITS																
SUB-TOTAL "A" EQUIPMENT		2742 000	499 000	566 000	1065 000	28250			10740					12880	139650	24990

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

LOCATION MEMPHIS, TENN.

SUBJECT SECTION: 430 FLY ASH ZONE IX

NO. 15-2203

DATE 11-2-79

PREPARED BY TJW/LJK

SHEET NO. 2 OF 2

	D- OTHER MATERIAL	MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE				BENEFITS		LABOR INCLUDING PRODUCTIVITY			
			COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'NPS.	MATERIAL	SH. UNITS	STANDARD M'NPS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M'NPS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
CIVIL	410 - EARTHWORK																	
	410 - ROADS & FENCES																	
	420 - PILING																	
	430 - UNDERGROUND CONCRETE																	
	430 - CONCRETE - STRUCTURES																	
	430 - - YARD RACK																	
	430 - PAVING - ALL																	
	440 - STRUCTURAL STEEL - ALL																	
	480 - STEEL YARD RACK																	
	470 - BUILDING																	
PIPING	490 - TROLLEYS, CRANES, HOISTS																	
	500 - VALVES																	
	500 - SHOP FABRICATED PIPING																	
	500 - LARGE O.D. PIPING																	
	500 - FIELD FABRICATED PIPING																	
	500 - SPECIALTIES																	
ELECTRICAL	500 - UNDERGROUND PIPING - ALL																	
	600 - INSTRUMENT & SPECIALTIES																	
	500 - INSTRUMENT - PIPING		76000							3000	13.42		1.05			3600	48310	3780
	600 - - ELECTRICAL																	
	700 - UNDERGROUND																	
	700 - POWER-EQUIPMENT																	
	700 - DISTRIBUTION																	
	700 - LIGHTING		50000							10000	12.13		1.95			12000	145560	23400
	700 - COMMUNICATIONS																	
	700 - ELECTRIC TRACING																	
MISCELLANEOUS & PROTECTIVE COVER	821 - INSULATION - PIPE																	
	822 - INSULATION - EQUIPMENT																	
	830 - PAINTING																	
	840 - FIREPROOFING																	
	900 - TESTING																	
	900 - CATALYST & CHEMICALS																	
	900 - EQUIP. SHOP, LAB & OFFICE																	
	900 - FIRE PROTECTION & SAFETY																	
	SUBTOTAL "B" OTHER MATERIAL		126000							13000						15600	193870	27180
	TOTAL COSTS ("A" & "B")		2868000	499000	566000	1065000	28250			23740						28480	333520	52170

INCLD WITH "Balance" Summary Sheet

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G. WIDOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE 11.2.79

SUBJECT SECTION 430
STEAM GENERATOR
ZONE IX

PREPARED BY TW/LUK

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	STANDARD M'HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL	
410 - EARTHWORK				20000	20000	1530							1.2				
410 - ROADS & FENCES																	
420 - PILING																	
430 - UNDERGROUND CONCRETE			125800	338800	464600	20910											
430 - CONCRETE - STRUCTURES																	
430 - - YARD RACK																	
430 - PAVING - ALL																	
460 - STRUCTURAL STEEL - ALL																	
480 - STEEL YARD RACK																	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
-																	
-																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING																	
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL																	
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING																	
600 - - ELECTRICAL								7500	1342		1.05			9000	120780	9450	
700 - UNDERGROUND																	
700 - POWER-EQUIPMENT																	
700 - DISTRIBUTION																	
700 - LIGHTING																	
700 - COMMUNICATIONS								5200	12.13		1.95			6240	75690	12170	
-																	
-																	
700 - ELECTRIC TRACING																	
821 - INSULATION - PIPE																	
822 - INSULATION - EQUIPMENT																	
830 - PAINTING																	
840 - FIREPROOFING																	
900 - TESTING																	
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		966 000	125800	358800	484600	22440		12700						15240	196470	21620	
TOTAL COSTS ("A" & "B")		983 000	6125800	4358800	10 484600	130440		12760						15310	197230	21760	

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE 11.2.79

SUBJECT SECTION 430 STEAM GENERATOR

PREPARED BY: TJW/JWK

SHEET NO. 1 OF 2

ZONE 1X

A-EQUIPMENT		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE		QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED															1.2		
	150 - TOWERS - FIELD FABRICATED																	
	120 - REACTORS																	
	130 - DRUMS	2	6000							40	10.70		2.17			50	530	110
	110 - TRAYS - ALL																	
	110 - PACKING - ALL																	
	110 - PACKING SUPPORTS - ALL																	
	110 - LININGS																	
	140 - STORAGE TANKS - SHOP FAB.																	
	140 - STORAGE TANKS - FIELD FAB.																	
HEAT TRANSFER	160 - PROCESS DUCTS																	
	160 - TRANSFER LINES																	
	210 - EXCHANGERS - S/T																	
	220 - DOUBLE PIPE																	
	230 - AIR FANS																	
	240 - HEATERS																	
	250 - STACKS																	
	243 - STEAM GENERATOR	2	—	6 000 000	4 000 000	10 000 000	108 000											
	250 - STEAM BOILERS																	
	260 - COOLING TOWER																	
MECH. EQUIP.	270 - VACUUM EQUIPMENT																	
	280 - REFRIGERATION EQUIPMENT																	
	290 - DEAERATORS																	
	310 - PUMPS																	
	320 - DRIVERS																	
	320 - COMPRESSORS & DRIVERS																	
	320 - BLOWERS																	
	315 - PHOSPHATE PACKAGE	1	11000							20	11.33		1.29			20	230	30
	330 - ELECTRICAL GENERATOR																	
	340 - FILTERS & SEPARATORS																	
MISC.	350 - SOLIDS HANDLING EQUIPMENT																	
	390 - MIXERS & AGITATORS																	
	910 - PACKAGE UNITS																	
SUB-TOTAL "A" EQUIPMENT			17000	6 000 000	4 000 000	10 000 000	108 000			60						70	760	140

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER MLGW/DOE
 LOCATION MEMPHIS TERN
 SUBJECT SECTION 430 - LOWE TX (BALANCE AREA)

NO. 15-2203
 DATE 11-2-79
 PREPARED BY JW
 SHEET NO. 7 OF 7

B: OTHER MATERIAL		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M' HRS.		MATERIAL	SI 6. UNPAID	STANDARD M' HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M' HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				90000	90000	6860									1.2			
410 - TRENCHING				33200	33200	2320												
420 - PILING																		
430 - UNDERGROUND CONCRETE			171300	504400	675700	29060												
430 - CONCRETE - STRUCTURES			2000	4000	6000	250												
430 - YARD RACK																		
430 - PAVING - ALL			57200	216300	273500	13680												
460 - STRUCTURAL STEEL - ALL		141000								3860	10.85		1.58			4430	50240	7310
480 - STEEL YARD RACK		242000								4540	10.85		1.58			5150	59130	8610
470 - BUILDING																		
490 - TROLLEYS, CRANES, HOISTS																		
500 - VALVES																		
500 - SHOP FABRICATED PIPING																		
500 - LARGE O.D. PIPING		1532000								60750	13.42		1.05			72950	978320	76550
500 - FIELD FABRICATED PIPING																		
500 - SPECIALTIES																		
500 - UNDERGROUND PIPING - ALL		29000								3280	13.42		1.05			3940	52870	4140
500 - UNDERGROUND FIBERGLASS		6000								400	13.42		1.05			450	6440	500
600 - INSTRUMENT & SPECIALTIES																		
600 - INSTRUMENT - PIPING		134000								5830	13.42		1.05			7600	93940	7350
600 - ELECTRICAL										2240	12.13		1.95			2690	92630	5250
600 - CONTROL ROOM INSTA.		168000								1490	12.13		1.95			1790	21710	3490
700 - UNDERGROUND		14000								2590	12.13		1.95			3110	37720	6060
700 - POWER-EQUIPMENT		WITH SECT 470																
700 - DISTRIBUTION		15000								1840	12.13		1.95			2210	26810	4310
700 - LIGHTING		26000								1920	12.13		1.95			2300	27900	4490
700 - COMMUNICATIONS																		
700 - ELECTRIC TRACING																		
821 - INSULATION - PIPE			85000	200000	285000	10000												
822 - INSULATION - EQUIPMENT			15000	31000	46000	1560												
830 - PAINTING																		
840 - FIREPROOFING																		
900 - TESTING																		
900 - CATALYST & CHEMICALS																		
900 - EQUIP. SHOP, LAB & OFFICE																		
900 - FIRE PROTECTION & SAFETY																		
SUBTOTAL "B" OTHER MATERIAL		2307000	330500	1078900	1409400	73930				88740						106500	1387710	128060
TOTAL COSTS ("A" & "B")		2307000	330500	1078900	1409400	73930				88740						106500	1387710	128060

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS TENN.

DATE 11.2.79

SUBJECT SECTION 430 RAW WATER, FIREWATER & TREATMENT - ZONE IX

PREPARED BY: TJW/LJK

SHEET NO. 1 OF 1

A-EQUIPMENT			MATERIALS		SUBCONTRACTS		ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED													1.2			
	150 - - FIELD FABRICATED																
	120 - REACTORS																
	130 - DRUMS																
	-																
	110 - TRAYS - ALL																
	110 - PACKING - ALL																
	110 - PACKING SUPPORTS - ALL																
	110 - LININGS																
	-																
140 - STORAGE TANKS - SHOP FAB.																	
140 - - FIELD FAB.	1		176000	144000	320000	7200											
160 - PROCESS DUCTS																	
160 - TRANSFER LINES																	
210 - EXCHANGERS - S/T																	
220 - DOUBLE PIPE																	
230 - AIR FANS																	
-																	
240 - HEATERS																	
240 - STACKS																	
-																	
250 - STEAM BOILERS																	
-																	
260 - COOLING TOWER																	
270 - VACUUM EQUIPMENT																	
280 - REFRIGERATION EQUIPMENT																	
290 - DEAERATORS																	
310 - PUMPS	8	174000							490	11.97		1.19			590	7060	700
380 - DRIVERS	8	7000							360	11.97		1.19			430	5150	510
320 - COMPRESSORS & DRIVERS																	
320 - BLOWERS																	
330 - ELECTRICAL GENERATOR																	
340 - FILTERS & SEPARATORS																	
350 - SOLIDS HANDLING EQUIPMENT																	
390 - MIXERS & AGITATORS																	
-																	
910 - PACKAGE UNITS																	
-																	
-																	
SUB-TOTAL "A" EQUIPMENT			181000	176000	144000	320000	7200		850						1020	12210	1210

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.I. G.W. DOE

NO. 15-2203

LOCATION MEMPHIS, TENN

DATE 11.2.79

SUBJECT SECTION 430 - ZONE IV (TESTING & PAINT FOR TOTAL SECTION)

PREPARED BY RW/LWK

SHEET NO. 1 OF 1

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M' HPS.	MATERIAL	SH. E. UNIT PAY	STANDARD M' HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M' HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK																	
410 - ROADS & FENCES																	
420 - PILING																	
430 - UNDERGROUND CONCRETE																	
430 - CONCRETE - STRUCTURES																	
430 - - YARD RACK																	
430 - PAVING - ALL																	
460 - STRUCTURAL STEEL - ALL																	
480 - STEEL YARD RACK																	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING																	
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL																	
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING																	
600 - - ELECTRICAL																	
700 - UNDERGROUND																	
700 - POWER-EQUIPMENT																	
700 - DISTRIBUTION																	
700 - LIGHTING																	
700 - COMMUNICATIONS																	
700 - ELECTRIC TRACING																	
821 - INSULATION - PIPE																	
822 - INSULATION - EQUIPMENT																	
830 - PAINTING			21000	119000	140000	5950											
840 - FIREPROOFING																	
900 - TESTING		2000							4100	13.34		1.12		1.2	4920	65630	5510
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP. LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		2000	21000	119000	140000	5950			4100						4920	65630	5510
TOTAL COSTS ("A" & "B")		2000	21000	119000	140000	5950			4100						4920	65630	5510

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE NO. 15-2203
 LOCATION MEMPHIS TENN DATE _____
 SUBJECT WASTE WATER TREATMENT - SECTION 440 PREPARED BY: TJW/LLK
ZONE X SHEET NO. 1 OF 2

A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED													1.2			
	150 - FIELD FABRICATED																
	120 - REACTORS																
	130 - DRUMS	2	70000						90	10.70		2.17			110	1180	240
	110 - TRAYS - ALL																
	110 - PACKING - ALL																
	110 - PACKING SUPPORTS - ALL																
	110 - LININGS																
HEAT TRANSFER	140 - STORAGE TANKS - SHOP FAB.	3	22000						250	10.70		2.17			300	3210	650
	140 - FIELD FAB.	2		43000	36000	79000	1790										
	160 - PROCESS DUCTS																
	160 - TRANSFER LINES																
	210 - EXCHANGERS - S/T																
	220 - DOUBLE PIPE																
	230 - AIR FANS																
MECH. EQUIP.	240 - HEATERS																
	240 - STACKS																
	250 - STEAM BOILERS																
	260 - COOLING TOWER																
	270 - VACUUM EQUIPMENT																
	280 - REFRIGERATION EQUIPMENT																
	290 - DEAERATORS																
MISC.	310 - PUMPS	45	189000						1630	11.97		1.19			1960	23460	2330
	320 - DRIVERS																
	320 - COMPRESSORS & DRIVERS	1	60000						190	11.33		1.29			230	2610	300
	320 - BLOWERS																
	330 - ELECTRICAL GENERATOR																
	340 - FILTERS & SEPARATORS																
	350 - SOLIDS HANDLING EQUIPMENT																
	390 - MIXERS & AGITATORS	7	19000						190	11.33		1.29			230	2610	300
	910 - PACKAGE UNITS		2381000						2900	11.33		1.29			3480	39430	4490
	920 - FURNACE			310000	510000	850000	20400										
SUB-TOTAL "A" EQUIPMENT		2,741,000	383,000	546,000	929,000	22190			5250						6310	72500	8310

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE

SUBJECT WASTE WATER TREATMENT SECT 480

PREPARED BY TJW/JJK

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.	MATERIAL	SI E-UNIT/HR	STANDARD M.HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE COST	PROD. FACTOR	TOTAL LABOR M.HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK			80000	555000	635000	42310							1.2			
410 - ROADS & FENCES																
420 - PILING																
430 - UNDERGROUND CONCRETE			231500	902500	1,134,000	55600										
430 - CONCRETE - STRUCTURES																
430 - YARD RACK																
430 - PAVING - ALL			47200	178800	226000	11300										
460 - STRUCTURAL STEEL - ALL		21000							740	10.85		1.58		890	9660	1410
480 - STEEL YARD RACK		48000							1380	10.85		1.58		1460	18010	2620
470 - BUILDING																
490 - TROLLEYS, CRANES, HOISTS																
500 - VALVES																
500 - SHOP FABRICATED PIPING																
500 - LARGE O.D. PIPING		945000							57960	13.42		1.05		69550	933360	75030
500 - FIELD FABRICATED PIPING																
500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL		48000							4450	13.42		1.05		5340	71660	5610
600 - INSTRUMENT & SPECIALTIES																
500 - INSTRUMENT - PIPING		212,000														
600 - ELECTRICAL									3880	12.13		1.95		9600	128830	10080
700 - UNDERGROUND		109000							15140	12.13		1.95		18170	220400	35430
700 - POWER EQUIPMENT		W/SECT 470														
700 - DISTRIBUTION		83000							12760	12.13		1.95		15310	185710	29850
700 - LIGHTING		79000							6570	12.13		1.95		7680	95580	15370
700 - COMMUNICATIONS																
700 - ELECTRIC TRACING																
821 - INSULATION - PIPE			55000	127000	182000	6400										
822 - INSULATION - EQUIPMENT			9300	18700	28000	930										
830 - PAINTING			5400	30600	36000	1530										
840 - FIREPROOFING																
900 - TESTING		1000							4085	13.31		1.16		4900	65220	5680
900 - CATALYST & CHEMICALS																
900 - EQUIP. SHOP, LAB & OFFICE																
900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		1,546,000	428400	1,812,600	2,241,000	118870			111085					133300	1728430	179080
TOTAL COSTS ("A" & "B")		4,287,000	811400	2,358,600	3,170,000	180260			116335					139610	1800930	187390

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M. L. G. W. DOE NO. 15-2203
 LOCATION MEMPHIS TENN. DATE 11.11.79
 SUBJECT COOLING TOWER - SECTION 450-ZONE XL PREPARED BY: TJW/LJK
 SHEET NO. 1 OF 2

	A-EQUIPMENT		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
	COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	TOTAL LABOR M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
VESSELS	110 - TOWERS - SHOP FABRICATED														1.2			
	150 - TOWERS - FIELD FABRICATED																	
	120 - REACTORS																	
	130 - DRUMS	3	76000							90	10.70		2.17			110	1180	240
	110 - TRAYS - ALL																	
	110 - PACKING - ALL																	
	110 - PACKING SUPPORTS - ALL																	
	110 - LININGS																	
	140 - STORAGE TANKS - SHOP FAB.																	
	140 - STORAGE TANKS - FIELD FAB.																	
HEAT TRANSFER	160 - PROCESS DUCTS																	
	160 - TRANSFER LINES																	
	210 - EXCHANGERS - S/T																	
	220 - DOUBLE PIPE																	
	230 - AIR FANS																	
	240 - HEATERS																	
	240 - STACKS																	
	250 - STEAM BOILERS																	
	260 - COOLING TOWER	1		757400	324600	1082000	13000											
	270 - VACUUM EQUIPMENT																	
MECH. EQUIP.	280 - REFRIGERATION EQUIPMENT																	
	290 - DEAERATORS																	
	310 - PUMPS	3	157000							600	11.97		719			720	8620	860
	320 - DRIVERS	3	599000							780	11.97		719			940	11250	1120
	320 - COMPRESSORS & DRIVERS																	
	320 - BLOWERS																	
	330 - ELECTRICAL GENERATOR																	
	340 - FILTERS & SEPARATORS																	
	350 - SOLIDS HANDLING EQUIPMENT																	
	390 - MIXERS & AGITATORS																	
MISC.	910 - PACKAGE UNITS	1	33000							40	11.33		129			50	570	60
	SUB-TOTAL "A" EQUIPMENT		865,000	757400	324600	1082000	13000			1510						1820	21620	2280

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M. L. G. IV/DOE

LOCATION MEMPHIS, TENN.

SUBJECT COOLING TOWER- SECTION 450 - ZONE XI

NO. 15-2203

DATE 11.16.79

PREPARED BY TJW/DJK

SHEET NO. 2 OF 2

B- OTHER MATERIAL		MATERIALS		SUBCONTRACTS			ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SI E-UNPM	STANDARD M'HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
CIVIL	410 - EARTHWORK			14640	14640	1080								1.2			
	410 - ROADS & FENCES																
	420 - PILING																
	430 - UNDERGROUND CONCRETE	CY 962.9	101810	308700	410510	19370											
	430 - CONCRETE - STRUCTURES																
	430 - YARD RACK																
	430 - PAVING - ALL																
	460 - STRUCTURAL STEEL - ALL		1000						30	10.85		1.58			40	430	60
	480 - STEEL YARD RACK																
	470 - BUILDING (Roofing Mark)			100	800	900	40										
490 - TROLLEYS, CRANES, HOISTS																	
PIPING	500 - VALVES																
	500 - SHOP FABRICATED PIPING																
	500 - LARGE O.D. PIPING		295000						5420	13.42		1.05			6500	87230	6830
	500 - FIELD FABRICATED PIPING																
	500 - SPECIALTIES																
500 - UNDERGROUND PIPING - ALL																	
INSTRUMENTS	600 - INSTRUMENT & SPECIALTIES																
	500 - INSTRUMENT - PIPING		44000						1490	13.42		1.05			1780	24020	1880
	600 - ELECTRICAL								880	12.13		1.95			1060	12860	2070
ELECTRICAL	700 - UNDERGROUND		8000						720	12.13		1.95			860	10430	1680
	700 - POWER-EQUIPMENT		W/56CT-470														
	700 - DISTRIBUTION		10000						390	12.13		1.95			470	5700	920
	700 - LIGHTING		25000						3030	12.13		1.95			4120	49980	8030
	700 - COMMUNICATIONS																
	700 - ELECTRIC TRACING																
	INSULATION - INSTR			2400	5600	8000	280										
PROTECTIVE COVER	821 - INSULATION - PIPE		7800	18200	26000	1300											
	822 - INSULATION - EQUIPMENT																
	830 - PAINTING		1950	11050	13000	550											
	840 - FIREPROOFING																
MISCELLANEOUS	900 - TESTING		1000						370	14.22		1.16			940	5840	510
	900 - CATALYST & CHEMICALS																
	900 - EQUIP. SHOP, LAB & OFFICE																
	900 - FIRE PROTECTION & SAFETY																
SUBTOTAL "B" OTHER MATERIAL		384000	114060	358940	473050	22620			12,730						15280	196490	21980
TOTAL COSTS ("A" & "B")		1249000	871460	683590	1,555,050	35620			14,240						17100	218110	24260

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE. LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11-16-77

SUBJECT FLARE SECTION 460 - ZONE XII

PREPARED BY: TJW/JJK

SHEET NO. 1 OF 2

FORM NO. 150-1000

A-EQUIPMENT		MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SUBCONTRACT	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M'HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
110 - TOWERS - SHOP FABRICATED														1.2			
150 - FIELD FABRICATED																	
120 - REACTORS																	
130 - DRUMS	3	50000							150	10.70		2.17			180	1930	390
110 - TRAYS - ALL																	
110 - PACKING - ALL																	
110 - PACKING SUPPORTS - ALL																	
110 - LININGS																	
140 - STORAGE TANKS - SHOP FAB.																	
140 - FIELD FAB.																	
160 - PROCESS DUCTS																	
160 - TRANSFER LINES																	
210 - EXCHANGERS - S/T																	
220 - DOUBLE PIPE																	
230 - AIR FANS																	
240 - HEATERS																	
240 - STACKS																	
250 - STEAM BOILERS																	
260 - COOLING TOWER																	
270 - VACUUM EQUIPMENT																	
280 - REFRIGERATION EQUIPMENT																	
290 - DEAERATORS																	
310 - PUMPS	2	4000							60	11.97		1.19			70	840	80
380 - DRIVERS																	
320 - COMPRESSORS & DRIVERS																	
320 - BLOWERS																	
330 - ELECTRICAL GENERATOR																	
340 - FILTERS & SEPARATORS																	
350 - SOLIDS HANDLING EQUIPMENT																	
390 - MIXERS & AGITATORS																	
910 - PACKAGE UNITS																	
920 - FLARE		112000							1120	10.70		2.17			1340	14340	2910
SUB-TOTAL "A" EQUIPMENT		166000							1330						1590	17110	3380

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11-16-79

SUBJECT FLARE SECTION 460 - ZONE XII

PREPARED BY TJW/SJK

SHEET NO. 2 OF 2

B. OTHER MATERIAL		MATERIALS		SUBCONTRACTS		ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY				
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	SA 6-UNIPAY 1	STANDARD M'HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				4000	4000	330								1.2			
410 - ROADS & FENCES																	
420 - PILING																	
430 - UNDERGROUND CONCRETE			8800	24300	33100	1500											
430 - CONCRETE - STRUCTURES																	
430 - - YARD RACK																	
430 - PAVING - ALL																	
460 - STRUCTURAL STEEL - ALL																	
480 - STEEL YARD RACK																	
470 - BUILDING																	
490 - TROLLEYS, CRANES, HOISTS																	
500 - VALVES																	
500 - SHOP FABRICATED PIPING																	
500 - LARGE O.D. PIPING		76000							2600	13.42		1.05			3120	41870	3280
500 - FIELD FABRICATED PIPING																	
500 - SPECIALTIES																	
500 - UNDERGROUND PIPING - ALL																	
600 - INSTRUMENT & SPECIALTIES																	
500 - INSTRUMENT - PIPING		26000							960	13.42		1.05			1150	15430	1210
600 - - ELECTRICAL									2740	12.13		1.95			3290	39910	6420
700 - UNDERGROUND		1000							190	12.13		1.95			230	2790	450
700 - POWER-EQUIPMENT		BY SECT. 470															
700 - DISTRIBUTION		500							100	12.13		1.95			120	1460	230
700 - LIGHTING		9000							1070	12.13		1.95			1280	15530	2500
700 - COMMUNICATIONS																	
INSULATION INSTR.			2100	4900	7000	250											
700 - ELECTRIC TRACING																	
821 - INSULATION - PIPE			6300	14700	21000	740											
822 - INSULATION - EQUIPMENT																	
830 - PAINTING			300	1700	2000	90											
840 - FIREPROOFING																	
900 - TESTING		500							170	13.24		1.18			200	2650	240
900 - CATALYST & CHEMICALS																	
900 - EQUIP. SHOP, LAB & OFFICE																	
900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		113000	17500	49600	67100	2910			7830						9390	119640	14330
TOTAL COSTS ("A" & "B")		279000	17500	49600	67100	2910			9160						10980	136750	17710

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M. L. G. W. DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE 11.2.79

SUBJECT BUILDINGS - SECTION 480 - ZONE VIII

PREPARED BY SJO

SHEET NO. 1 OF 1

B. OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'HRS.	MATERIAL	STANDARD M'HRS	LABOR RATE	PAYROLL	RATE	COST	PROD. FACTOR	M'HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
CIVIL	410 - EARTHWORK															
	410 - ROADS & FENCES															
	420 - PILING															
	430 - UNDERGROUND CONCRETE															
	430 - CONCRETE - STRUCTURES															
	430 - YARD RACK															
	430 - PAVING - ALL															
	460 - STRUCTURAL STEEL - ALL															
	480 - STEEL YARD RACK															
	470 - BUILDING			4,719,000	4,719,000	9,438,000	188,770									
490 - TROLLEYS, CRANES, HOISTS																
PIPING																
	500 - VALVES															
	500 - SHOP FABRICATED PIPING															
	500 - LARGE O.D. PIPING															
	500 - FIELD FABRICATED PIPING															
	500 - SPECIALTIES															
	500 - UNDERGROUND PIPING - ALL															
INSTRUMENTS	600 - INSTRUMENT & SPECIALTIES															
	500 - INSTRUMENT - PIPING															
	600 - ELECTRICAL															
ELECTRICAL	- CONTROL ROOM - INST.	1,685,000						3,120	12.13		1.95		1.2	3,740	45,370	7,290
	700 - UNDERGROUND															
	700 - POWER EQUIPMENT															
	700 - DISTRIBUTION															
	700 - LIGHTING															
	700 - COMMUNICATIONS															
	700 - ELECTRIC TRACING															
PROTECTIVE COVER	821 - INSULATION - PIPE															
	822 - INSULATION - EQUIPMENT															
	830 - PAINTING															
	840 - FIREPROOFING															
MISCELLANEOUS	900 - TESTING															
	900 - CATALYST & CHEMICALS															
	900 - EQUIP. SHOP, LAB & OFFICE	130,000														
	900 - FIRE PROTECTION & SAFETY															
SUBTOTAL "B" OTHER MATERIAL		18,150,000	4,719,000	4,719,000	9,438,000	188,770		3,120						3,740	45,370	7,290
TOTAL COSTS ("A" & "B")		18,150,000	4,719,000	4,719,000	9,438,000	188,770		3,120						3,740	45,370	7,290

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.
 CUSTOMER: DELTA/D&E NO. 15-2203
 LOCATION: NEUTRIS TERN DATE: 11-16-78
 SUBJECT: SECTION 470 - ZONE XIV PREPARED BY: 578
 SHEET NO. 1 OF 1

	MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 1000 TOTAL	N° HRS.	MATERIAL	SUBCONTRACT	STANDARD N° HRS.	LABOR DATE	PAYROLL	COST CODE 7100 DATE	COST	PROD. FACTOR	TOTAL LABOR N° HRS.	COST CODE 8000 TOTAL	BRIEFEST TOTAL
1-SITE PREP				16,379.00												
2-L.F.G. ODOORIZATION PKG.	12.000							30	11.33		1.89		1.2	40	450	50
3-INTERCONNECTING PIPING	2,271,000	152250	36170	514,000	1840			82780	11.33		1.05		1.2	92290	1,332,470	24250
4-UNDERGROUND HPING	753,000			3,583,000				48170					1.2	57810	775220	61820
5-POWER DISTRIBUTION CONTINUATIONS	5,234,000	3450	28050	33000	1400			72710	11.13		1.95		1.2	87250	881970	121280
6-ROADS, FENCES & PIPERACK SUPPORTS	667,000	749150	202410	2,773,000	1260			13705	10.8		1.58		1.2	76450	178460	25900
	9,129,000			23,502,000				217355						260840	3,168,590	332890

STER WHEELER ENERGY CORPORATION

ESTIMATE

CUSTOMER ALCOA/DOR No. 15-2203
 LOCATION MEMPHIS TENN DATE 11-16-79
 PROJECT SECTION 470 - ZONE XIV SHEET No. 1 OF 1
 PREPARED BY [Signature]

SITE PREP	2000	
SITE CLEARING, DREDGING FILLING & ACCESS ROAD (W.M. McWILLIAMS QUOTE)	13604700	
VIBRO FLATION (VIBRO FLATION FOUNDATION CO. QUOTE)	2994300	
	16599000	

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W/DOE
 LOCATION MEMPHIS, TENN.
 SUBJECT INTERCONNECTING PIPING - SECTION 470
ZONE XIV

NO. 15-2203
 DATE _____
 PREPARED BY TJM/JJK
 SHEET NO. _____ OF _____

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION	LABOR BASE			BENEFITS	LABOR INCLUDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.	MATERIAL	STANDARD M.HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE COST	PROD. FACTOR	TOTAL LABOR M.HRS.	COST CODE 8000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK												1.2			
410 - ROADS & FENCES															
420 - PILING															
430 - UNDERGROUND CONCRETE															
430 - CONCRETE - STRUCTURES															
430 - YARD RACK															
430 - PAVING - ALL															
460 - STRUCTURAL STEEL - ALL															
480 - STEEL YARD RACK															
470 - BUILDING															
490 - TROLLEYS, CRANES, HOISTS															
500 - VALVES															
500 - SHOP FABRICATED PIPING															
500 - LARGE O.D. PIPING		1270000						78060	1342		1.05		93670	1257050	98350
500 - FIELD FABRICATED PIPING															
500 - SPECIALTIES															
500 - UNDERGROUND PIPING - ALL															
600 - INSTRUMENT & SPECIALTIES															
600 - INSTRUMENT - PIPING															
600 - ELECTRICAL															
700 - UNDERGROUND															
700 - POWER EQUIPMENT															
700 - DISTRIBUTION															
700 - LIGHTING															
700 - COMMUNICATIONS															
700 - ELECTRIC TRACING															
821 - INSULATION - PIPE			150300	350700	501000	17540									
822 - INSULATION - EQUIPMENT															
830 - PAINTING			1950	11050	13000	550									
840 - FIREPROOFING															
900 - TESTING		1000						4680	1342		1.05		5620	75420	5900
900 - CATALYST & CHEMICALS															
900 - EQUIP. SHOP, LAB & OFFICE															
900 - FIRE PROTECTION & SAFETY															
SUBTOTAL "B" OTHER MATERIAL		1,271,000	152250	361750	514000	18090		82740					99290	1,332,470	104200
TOTAL COSTS ("A" & "B")		1,271,000	152250	361750	514000	18090		82740					99290	1,332,470	104200

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

LOCATION MEMPHIS, TENN.

SUBJECT UNDERGROUND - SECTION 470

NO. 15-2203

DATE

PREPARED BY TJW/JJK

SHEET NO. OF

C- OTHER MATERIAL		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY			
	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M.HRS.		MATERIAL	S.E. UNIT PAY	STANDARD M.HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	TOTAL LABOR		
																M.HRS.	COST CODE #000 TOTAL	BENEFIT TOTAL
CIVIL	410 - EARTHWORK		970610	2576390	3,597,600	146,354									1.2			
	410 - ROADS & FENCES																	
	420 - PILING																	
	430 - UNDERGROUND CONCRETE CY	48	6010	21990	28,000	1337												
	430 - CONCRETE - STRUCTURES																	
	430 - - YARD RACK																	
	430 - PAVING - ALL																	
	460 - STRUCTURAL STEEL - ALL T	3.8								190	10.85		1.58			230	2500	360
	480 - STEEL YARD RACK																	
	470 - BUILDING																	
PIPING	490 - TROLLEYS, CRANES, HOISTS																	
	500 - VALVES																	
	500 - SHOP FABRICATED PIPING																	
	500 - LARGE O.D. PIPING																	
	500 - FIELD FABRICATED PIPING																	
INSTRUMENTS	500 - SPECIALTIES																	
	500 - UNDERGROUND PIPING - ALL STORAGE PILES	25000								5630	13.42		1.05			6746	90720	7100
	UNDERGROUND PIPING	722000								39950	13.42		1.05			47940	643350	50340
	600 - INSTRUMENT & SPECIALTIES																	
	600 - INSTRUMENT - PIPING																	
ELECTRICAL	600 - - ELECTRICAL																	
	700 - UNDERGROUND																	
	700 - POWER-EQUIPMENT																	
	700 - DISTRIBUTION																	
	700 - LIGHTING																	
MISCELLANEOUS PROTECTIVE COVER	700 - COMMUNICATIONS																	
	700 - ELECTRIC TRACING																	
	821 - INSULATION - PIPE																	
	822 - INSULATION - EQUIPMENT																	
	830 - PAINTING		1200	6,800	8,000	340												
	840 - FIREPROOFING																	
	900 - TESTING	100.0								2400	19.42		1.05			2880	38650	3020
	900 - CATALYST & CHEMICALS																	
	900 - EQUIP. SHOP, LAB & OFFICE																	
	900 - FIRE PROTECTION & SAFETY																	
SUBTOTAL "B" OTHER MATERIAL		753,000	977,820	2,605,180	3,583,000	198,022				46170						57810	775,220	60820
TOTAL COSTS ("A" & "B")		753,000	977,820	2,605,180	3,583,000	198,022				48170						57810	775,220	60820

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W. / DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE

SUBJECT POWER DIST. COMMUNICATIONS - SECTION 479
ZONE XIV

PREPARED BY 520

SHEET NO. OF

B- OTHER MATERIAL		MATERIALS	SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR INCLUDING PRODUCTIVITY				
COST CODE		QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M' HPS.	MATERIAL	SI B. UNIT/PAV	STANDARD M' HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M' HRS.	COST CODE 4000 TOTAL	BENEFIT TOTAL
CIVIL	410 - EARTHWORK														1.2			
	410 - ROADS & FENCES																	
	420 - PILING																	
	430 - UNDERGROUND CONCRETE																	
	430 - CONCRETE - STRUCTURES																	
	430 - - YARD RACK																	
	430 - PAVING - ALL																	
	460 - STRUCTURAL STEEL - ALL																	
	480 - STEEL YARD RACK																	
	470 - BUILDING																	
PIPING	490 - TROLLEYS, CRANES, HOISTS																	
	-																	
	-																	
	500 - VALVES																	
	500 - SHOP FABRICATED PIPING																	
	500 - LARGE O.D. PIPING																	
INSTRUMENTS	500 - FIELD FABRICATED PIPING																	
	500 - SPECIALTIES																	
	500 - UNDERGROUND PIPING - ALL																	
	600 - INSTRUMENT & SPECIALTIES																	
ELECTRICAL	500 - INSTRUMENT - PIPING																	
	600 - - ELECTRICAL																	
	700 - UNDERGROUND		111000							19160	12.13		1.95			22490	278870	44830
	700 - POWER-EQUIPMENT		4145,000							18600	12.13		1.95			22326	270740	43520
	700 - DISTRIBUTION		432,000							12620	12.13		1.95			15140	183650	29520
	700 - LIGHTING		235,000							11430	12.13		1.95			13720	166420	26750
	700 - COMMUNICATIONS		428,000							5170	12.13		1.95			6200	75210	12090
	- ELECTRICAL - INST.		11,000							1960	12.13		1.95			2350	28510	4580
	- CATHODE PROTECTION		50,000							500	12.13		1.95			600	7280	1170
	700 - ELECTRIC TRACING		13,000							2550	12.13		1.95			3060	37120	5970
PROTECTIVE COVER	821 - INSULATION - PIPE																	
	822 - INSULATION - EQUIPMENT																	
	830 - PAINTING			4950	28050	33000	1400											
	840 - FIREPROOFING																	
MISCELLANEOUS	900 - TESTING		1000							720	12.13		1.95			860	10430	1680
	900 - CATALYST & CHEMICALS																	
	900 - EQUIP. SHOP, LAB & OFFICE																	
	900 - FIRE PROTECTION & SAFETY																	
	SUBTOTAL "B" OTHER MATERIAL		5,426,000	4950	28050	33000	1400			72710							87240	1,058,230
TOTAL COSTS ("A" & "B")			5,426,000	4950	28050	33000	1400			72710						87240	1,058,230	170110

MATERIALS, SUBCONTRACTS, & LABOR, COST ESTIMATE

FOSTER WHEELER ENERGY CORP., 110 SOUTH ORANGE AVE., LIVINGSTON, N.J.

CUSTOMER M.L.G.W./DOE

NO. 15-2203

LOCATION MEMPHIS, TENN.

DATE

SUBJECT ROADS, FENCES & PIERCEK SUPPORTS

PREPARED BY SB

SECTION 470 - ZONE XIV

SHEET NO. OF

B - OTHER MATERIAL		MATERIALS		SUBCONTRACTS				ESCALATION		LABOR BASE			BENEFITS		LABOR ACCORDING PRODUCTIVITY			
COST CODE	QTY	COST CODE 1000 TOTAL	MATERIAL	LABOR	COST CODE 2000 TOTAL	M'NPS.		MATERIAL	SI E-UNIT PAY	STANDARD M' HRS	LABOR RATE	PAYROLL	COST CODE 7100 RATE	COST	PROD. FACTOR	M' HRS	COST CODE 4000 TOTAL	BENEFIT TOTAL
410 - EARTHWORK				1154.400	1,154.400	87900												
410 - ROADS & FENCES			601300	400800	1,002.100	200400												
420 - PILING																		
430 - UNDERGROUND CONCRETE	CY 1462		139900	436.100	576.000	26920												
430 - CONCRETE - STRUCTURES																		
430 - - YARD RACK																		
430 - PAVING - ALL	SY 10233		7200	28600	35800	1470												
460 - STRUCTURAL STEEL - ALL																		
480 - STEEL YARD RACK	T 559	667.000								13.705	10.85		1.58		1.2	16450	178480	25990
470 - BUILDING																		
490 - TROLLEYS, CRANES, HOISTS																		
500 - VALVES																		
500 - SHOP FABRICATED PIPING																		
500 - LARGE O.D. PIPING																		
500 - FIELD FABRICATED PIPING																		
500 - SPECIALTIES																		
500 - UNDERGROUND PIPING - ALL																		
600 - INSTRUMENT & SPECIALTIES																		
500 - INSTRUMENT - PIPING																		
600 - - ELECTRICAL																		
700 - UNDERGROUND																		
700 - POWER EQUIPMENT																		
700 - DISTRIBUTION																		
700 - LIGHTING																		
700 - COMMUNICATIONS																		
700 - ELECTRIC TRACING																		
821 - INSULATION - PIPE																		
822 - INSULATION - EQUIPMENT																		
830 - PAINTING			750	4250	5000	210												
840 - FIREPROOFING																		
900 - TESTING																		
900 - CATALYST & CHEMICALS																		
900 - EQUIP. SHOP. LAB & OFFICE																		
900 - FIRE PROTECTION & SAFETY																		
SUBTOTAL "B" OTHER MATERIAL		667.000	749.150	2,024.150	2,773.300	136.500				13.705						16450	178480	25990
TOTAL COSTS ("A" & "B")		667.000	749.150	2,024.150	2,773.300	136.500				13.705						16450	178480	25990

MLGW/DOE INDUSTRIAL FUEL GAS DEMONSTRATION PLANT PROGRAM

Section 14

BASIS OF ESCALATION

In order to provide the best possible working estimate for Phase II and III, it is necessary to include a provision for escalation. Since rates of inflation differ between industries and geographical location, each member of the MLGW Industrial Team has forecast escalation for their own work.

This section, "Basis of Escalation" provides the basis used in determining the escalation provision shown in other sections of the report.

14.1 MLGW Escalation Basis

MLGW escalation is based on a rate of 7% per year.

14.2 IGT Escalation Basis

IGT escalation is based on a rate of 7.5% per year.

14.3 DRC Escalation Rate

DRC escalation is based on a rate of 10% per year.

14.4 Foster Wheeler Energy Corporation Escalation Basis

FWEC has estimated escalation on materials, construction labor and management, and engineering at an annual rate of 7%.

Although FWEC guidelines would have indicated a slightly higher rate for materials and construction labor, the estimate of future economic conditions is subjective. Therefore, FWEC has estimated escalation at the Federal Government guideline rate of 7%.

Table 14.1 shows the basis of how the annual rate of 7% was used to calculate an escalation provision. The DOE did not approve the construction planning task in sufficient time to allow its use in this calculation. However, it is very unlikely that such a detailed schedule would affect the estimate calculated on Table 14.1. FWEC experience has been that the mid point of expenditures closely occurs with approx. 60-70% of the schedule expended.

COST PROPOSALS

1. Original Estimate - Phases II & III
2. Distribution System
3. IGT Subs - (Panelit - Ill. Insulation - Morrison)
4. FWEC - CS²
5. Delta - revised costs

*McLan
Deliverable 23*

CONTRACT PRICING PROPOSAL

(RESEARCH AND DEVELOPMENT)

Office of Management and Budget
Approval No. 29-RO184

This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.

PAGE NO.

NO. OF PAGES

NAME OF OFFEROR

Institute of Gas Technology

HOME OFFICE ADDRESS

3424 So. State Street
Chicago, Illinois 60616

SUPPLIES AND/OR SERVICES TO BE FURNISHED

Industrial Fuel Gas Demonstration
Plant Program - Phase II

DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED

Same

TOTAL AMOUNT OF PROPOSAL

\$ 11,624,644

GOV'T SOLICITATION NO.

DETAIL DESCRIPTION OF COST ELEMENTS

1. DIRECT MATERIAL (Itemize on Exhibit A)	EST COST (\$)	TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS	899,851		
b. SUBCONTRACTED ITEMS	1,484,452		
c. OTHER—(1) RAW MATERIAL			
(2) YOUR STANDARD COMMERCIAL ITEMS			
(3) INTERDIVISIONAL TRANSFERS (At other than cost)			
TOTAL DIRECT MATERIAL		2,384,303	
2. MATERIAL OVERHEAD ³ (Rate % X \$ base =)			
3. DIRECT LABOR (Specify)	ESTIMATED HOURS	RATE/HOUR	EST COST (\$)
Direct Labor at IGT Facility			1,660,449
" " " DOE "			1,910,827
TOTAL DIRECT LABOR			3,571,276
4. LABOR OVERHEAD (Specify Department or Cost Center) ⁴	O.H. RATE	X BASE =	EST COST (\$)
Direct Labor Base - IGT Facility	99%	1660449	1,643,845
Total Direct Cost Base - DOE Facility	17%	4353030	740,015
TOTAL LABOR OVERHEAD			2,383,860
5. SPECIAL TESTING (Including field work at Government installations)		EST COST (\$)	
TOTAL SPECIAL TESTING			
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)			305,800
7. TRAVEL (If direct charge) (Give details on attached Schedule)		EST COST (\$)	
a. TRANSPORTATION		51,648	
b. PER DIEM OR SUBSISTENCE		26,100	
TOTAL TRAVEL			77,748
8. CONSULTANTS (Identify—purpose—rate)		EST COST (\$)	
		10,500	
TOTAL CONSULTANTS			10,500
9. OTHER DIRECT COSTS (Itemize on Exhibit A)			112,000
10. TOTAL DIRECT COST AND OVERHEAD			8,845,487
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 9.0 % of cost element Nos. 10)			796,094
12. Escalation			1,172,042 Ref. 1
13. TOTAL ESTIMATED COST			10,813,623
14. FEE OR PROFIT			811,021
15. TOTAL ESTIMATED COST AND FEE OR PROFIT			11,624,644

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

T. J. Parkes, Assistant Director
Contract Administration

SIGNATURE

Harke

NAME OF FIRM

INSTITUTE OF GAS TECHNOLOGY

DATE OF SUBMISSION:

1/17/83

EXHIBIT A—SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse)

[illegible]

☒ YES ☐ NO (If yes, identify below:)

See Reference B

TELEPHONE NUMBER/EXTENSION

☐ YES ☒ NO (If yes, identify on reverse or separate page)

☐ YES ☒ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☐ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

☒ YES ☐ NO. (If yes, identify.): Continuation of Contract EF-77-C-01-2582

☒ YES ☐ NO (If no, explain on reverse or separate page)

Reference #1

Escalation Rationale - Phase II

<u>Element of Cost</u>	<u>Escalation Amount</u>	<u>Basis/Rate of Escalation</u>
Subcontracted Items	\$ 213,190	All Subcontracted items have been escalated by 7.5% for each year starting with June 1980.
Direct Labor-IGT Facility	248,749	The direct labor has been escalated by 7.5% for each year starting September 1980.
Direct Labor-DOE Facility	281,475	
Overhead - IGT Facility	246,261	Consultant's Rate has been escalated by approximately 7% for each year starting September 1980
Overhead - DOE Facility	84,093	
Consultant	1,500	
G & A	96,774	
Total	<u>\$1,172,042</u>	Line 12 of Optional Form 60

CONTRACT PRICING PROPOSAL (RESEARCH AND DEVELOPMENT)				Office of Management and Budget Approval No. 29-RO184	
This form is for use when (i) submission of cost or pricing data (see FPR 1-3.807-3) is required and (ii) substitution for the Optional Form 59 is authorized by the contracting officer.				PAGE NO.	NO. OF PAGES
NAME OF OFFEROR Institute of Gas Technology		SUPPLIES AND/OR SERVICES TO BE FURNISHED Industrial Fuel Gas Demonstration Plant Program Phase III			
HOME OFFICE ADDRESS 3424 So. State Street Chicago, Illinois 60616					
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED Same		TOTAL AMOUNT OF PROPOSAL \$ 5,381,024		GOV'T SOLICITATION NO.	
DETAIL DESCRIPTION OF COST ELEMENTS					
1. DIRECT MATERIAL (Itemize on Exhibit A)		EST COST (\$)		TOTAL EST COST ¹	REFER- ENCE ²
a. PURCHASED PARTS		319,248			
b. SUBCONTRACTED ITEMS		588,018			
c. OTHER—(1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL				907,266	
2. MATERIAL OVERHEAD ³ (Rate %X'S base=)					
3. DIRECT LABOR (Specify)		ESTIMATED HOURS	RATE/ HOUR	EST COST (\$)	
Direct Labor at IGT Facility				615,333	
" " " DOE Facility				931,278	
TOTAL DIRECT LABOR				1,546,611	
4. LABOR OVERHEAD (Specify Department or Cost Center) ⁴		O.H. RATE	X BASE=	EST COST (\$)	
Direct Labor - IGT Facility		99%	615,333	609,180	
Total Direct Cost - DOE Facility		17%	1,874,544	318,672	
TOTAL LABOR OVERHEAD				927,852	
5. SPECIAL TESTING (Including field work at Government installations)		EST COST (\$)			
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)		EST COST (\$)			
a. TRANSPORTATION		21,088			
b. PER DIEM OR SUBSISTENCE		24,000			
TOTAL TRAVEL				45,088	
8. CONSULTANTS (Identify—purpose—rate)		EST COST (\$)			
TOTAL CONSULTANTS					
9. OTHER DIRECT COSTS (Itemize on Exhibit A)				36,000	
TOTAL DIRECT COST AND OVERHEAD				3,462,817	
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate 9.0 % of cost element Nos. 10)				311,654	
12. EXHAUST Escalation				1,231,133	Ref. 1
TOTAL ESTIMATED COST				5,005,604	
14. FEE OR PROFIT				375,420	
TOTAL ESTIMATED COST AND FEE OR PROFIT				5,381,024^y	

and reflects our best estimates as of this date, in accordance with the Instructions to Offerors and the Footnotes which follow.

Harke

1/17/87

[illegible]

☒ YES ☐ NO (If yes, identify below.)

See Reference B

☐ YES ☒ NO (If yes, identify on reverse or separate page)

☐ YES ☒ NO (If yes, identify.): ☐ ADVANCE PAYMENTS ☐ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

☒ YES ☐ NO (If yes, identify.): Continuation of Contract EF-77-C-01-2582

☒ YES ☐ NO (If no, explain on reverse or separate page)

Reference #1

Escalation Rationale - Phase III

<u>Element of Cost</u>	<u>Escalation Amount</u>	<u>Basis/Rate of Escalation</u>
Subcontracted Items	\$ 182,738	All subcontracted items have been escalated by 7.5% for each year starting June, 1980
Direct Labor - IGT Facility	249,652	The Direct Labor has been escalated by 7.5% for each year starting September 1980
Direct Labor - DOE Facility	358,008	
Overhead - IGT Facility	247,155	
Overhead - DOE Facility	91,927	
G & A	101,653	
Total	<u>\$1,231,133</u>	Line 12 of Optional Form 60