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MASTER

United States
Department of Energy

DELIVERABLE No. 7C

CURRENT WORKING ESTIMATES FOR PHASES II AND III
ALLOWING 7% ANNUAL ESCALATION

SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM
PHASE I

DECEMBER 1979

PREPARED UNDER CONTRACT No. ET-77-C-01-2577

GRACE

W. R. GRACE & CO.
Agricultural Chemicals Group
Memphis, Tennessee

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Prepared for the

U.S. DEPARTMENT OF ENERGY

Assistant Secretary for Energy Technology
Office of Fossil Fuels

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Dec 28, 1979

DATE

PREPARED FOR THE UNITED STATES
DEPARTMENT OF ENERGY
UNDER CONTRACT No. ET-77-C-01-2577

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SECTION I

INTRODUCTION

The Current Working Estimates for Phases II and III, as described in the Statement of Work for Contract No. ET-77-C-01-2577, were submitted to DOE on October 31, 1979, as Deliverable No. 23. These estimates were presented as fully forward priced based on best estimate escalation assumptions developed by Grace and exhibited in detail in an appendix to Deliverable No. 23.

At the request of DOE, the estimate of capital and operating costs applicable to Phases II and III have been recalculated using a seven percent annual escalation factor for all categories of cost. Utilizing the base dollar (February 15, 1979) estimates in accordance with Deliverable No. 23 and allowing the requested seven percent escalation, the following table summarizes the Phases II and III costs.

PHASES II AND III COST ESTIMATE SUMMARY
ASSUMING 7% ANNUAL ESCALATION(a)
(\$000)

Line No.	Item	(1) (2) (3)		
		Current Working Estimate		
		Applicable to		
		Demonstration Plant	Ammonia Plant	Integrated Facility
(1)	Phase II Cost(b)	\$455,856.8	\$63,435.0	\$519,291.8
(2)	Phase III Cost(c)	107,249.8	8,554.4	115,804.2
(3)	Total Phases II and III	<u>\$563,106.6</u>	<u>\$71,989.4</u>	<u>\$635,096.0</u>
	<u>Grace Share</u>			
(4)	Phase II(b)	\$227,928.4	\$63,435.0	\$291,363.4
(5)	Phase III(c)	53,624.9	8,554.4	62,179.3
(6)	Total Phases II and III	<u>\$281,553.3</u>	<u>\$71,989.4</u>	<u>\$353,542.7</u>
	<u>DOE Share</u>			
(7)	Phase II(b)	\$227,928.4	-	\$227,928.4
(8)	Phase III(c)	53,624.9	-	53,624.9
(9)	Total Phases II and III	<u>\$281,553.3</u>	<u>-</u>	<u>\$281,553.3</u>

- (a) Does not reflect spending estimate which is impacted by sequential spending pattern.
- (b) As used in this estimate, the Phase II cost is synonymous with fixed assets, i.e., construction interest, working capital and investment tax credit are not included.
- (c) Excludes depreciation and revenues (product and by-product).

As had previously been agreed between Grace and DOE, it should be noted that the base capital estimate used in development of the figures presented herein is as presented in Deliverable No. 23 and does not reflect anticipated adjustments in the areas of additional land requirements for noise mitigation and elimination of pond liners in slag disposal areas.

The remaining sections of this document offer summary details in support of the Phases II and III estimates. These sections are as follows:

Section No.	Subject
II	Phase II Current Working Estimate
III	Phase III Current Working Estimate
IV	Escalation Criteria

While details of the forward pricing, allocation and cost sharing estimates are presented herein, it should be noted that data supportive of the base capital and operating costs, together with the approved Allocation Method, were presented in Deliverable No. 23 and are not repeated here.

Any review of this document should recognize that the seven percent escalation which serves as the basis is as directed by DOE and does not represent Grace's best estimate of the expected costs of Phases II and III.

SECTION II

CURRENT WORKING ESTIMATE FOR PHASE II

Consistent with that presentation of Deliverable No. 23, the Phase II estimate consists of the costs associated with the detailed engineering, procurement and construction of the Integrated Facility. These costs are subsequently segregated, in accordance with the Allocation Method, between the Demonstration Plant and the Ammonia Plant. As indicated in the Introduction, the supporting detail to the base capital cost estimate was presented in Deliverable No. 23 and will not be repeated here. However, the summary presentation of this estimate, including forward pricing, allocation and, finally, separation in accordance with the cost sharing requirements of the Prime Contract, are indicated in tables which follow. Each table will be preceded by a brief explanation.

Base Estimate Detail

As initially developed in the Allocation Method and as presented in Deliverable No. 23, the capital cost estimate reflects some twenty-seven cost centers and nineteen elements of cost. These breakdowns are indicated below.

Capital Cost Centers

1. Docking Facility	14. Treated Water
2. Coal Handling/Crushing
and Storage	15. Waste Treatment
3. Slurry Preparation	16. Ash Disposal
4. Coal Gasification	17. Electrical Supply
5. Carbon/Ash Separation	18. Railroad Service
6. CO Shift	19. General Plant
7. Acid Gas Removal	20. Maintenance
8. Nitrogen Wash	21. Land
9. Air Separation	22. Grace Project Management
Costs
10. Sulfur Recovery/Shipping	23. Ammonia Synthesis
11. Steam Generation/
Distribution	24. Ammonia Shipping and Storage
12. Raw Water	25. Texaco License Fee
13. Cooling Water	26. Training Cost (Preoperations)
	27. Grace G&A Expense

Elements of Cost

1. Equipment	11. Freight
2. Concrete	12. Sales/Use Tax
3. Structural Steel	13. License Fee
4. Buildings	14. Spare Parts
5. Piping	15. Site Preparation
6. Insulation	16. Engineering
7. Instrumentation	17. A/E Fee
8. Electrical	18. Field Indirects
9. Painting	19. Other
10. Catalyst and Chemicals	

The base estimate, as reflected in Table 1 on the following page, is identical to that presented in Deliverable No. 23. Only in the area of forward-pricing assumptions does this current working estimate differ from that previously presented to DOE.

(Table 1 follows)

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY
PHASE II BASE CAPITAL SUMMARY
(\$000 - 2/15/79)

INTEGRATED FACILITY
PHASE II BASE CAPITAL SUMMARY
(\$000 - 2/15/79)

Line No.	Cost Center(a)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
		Equipment	Concrete	Structural Steel	Buildings	Piping	Insulation	Instrumentation	Electrical	Painting	Catalyst & Chemical	Freight	Sales/Use Tax	License Fee	Spare Parts	Site Preparation	A/E Engineering	A/E Fee	Field Indirects	Other	Total Capital Cost
(1)	Docking Facility	\$ 345	\$ 2,275	\$1,036	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11	\$ -	\$ 2	\$ -	\$ -	\$ -	\$ -	\$ 336	\$ 81	\$ 46	\$ -	\$ 4,132
(2)	Coal Handling, Crushing and Storage	16,523	2,241	-	2,148	-	-	-	6,512	330	-	36	123	-	-	-	3,928	945	1,375	-	34,161
(3)	Slurry Preparation	3,428	-	-	754	308	-	216	1,860	96	-	106	29	-	-	-	610	147	468	-	8,022
(4)	Coal Gasification	14,744	313	512	10,653	8,608	510	1,296	3,144	318	-	635	421	-	107	-	4,997	1,203	1,488	-	48,949
(5)	Carbon/Ash Separation	2,605	200	343	-	5,996	144	244	660	96	-	120	5	-	82	-	933	225	504	-	12,157
(6)	CO Shift	5,354	129	567	-	3,425	214	536	380	230	705	262	48	-	705	-	1,103	265	425	-	14,248
(7)	Acid Gas Removal	14,296	1,354	358	-	2,456	144	1,171	575	103	-	681	6	1,010	569	-	521	125	1,208	-	24,577
(8)	Nitrogen Wash	3,669	325	83	-	420	36	-	220	44	-	176	1	-	-	-	89	22	286	-	5,371
(9)	Air Separation	19,348	1,412	320	-	1,631	-	209	576	-	16	937	2	-	2,430	-	274	66	1,553	-	28,774
(10)	Sulfur Recovery/Shipping	7,477	998	691	-	2,396	462	541	1,782	426	111	324	77	105	290	-	715	172	1,805	-	18,372
(11)	Steam Generation/Distribution	25,045	978	538	1,089	11,176	3,371	2,290	5,757	983	-	1,637	1,523	259	296	-	6,993	1,683	5,333	-	68,951
(12)	Raw Water	1,569	340	-	85	3,434	65	49	616	22	-	24	259	-	48	-	610	147	572	-	7,858
(13)	Cooling Water	4,132	1,165	-	85	2,829	-	166	5,280	68	-	80	576	-	330	-	1,550	373	1,419	-	18,053
(14)	Treated Water	367	100	-	-	1,666	269	26	426	11	36	12	-	-	41	-	280	68	334	-	3,636
(15)	Waste Treatment	1,311	1,185	324	-	1,243	-	92	516	36	-	44	-	-	-	-	419	101	648	-	5,119
(16)	Ash Disposal	4,449	8,001	-	72	1,597	40	72	784	180	-	142	594	-	-	-	1,639	394	1,476	-	19,440
(17)	Electrical Supply	-	-	-	-	-	-	-	2,635	-	-	-	86	-	-	-	206	50	-	-	2,977
(18)	Railroad Service	1,905	-	-	-	-	-	-	-	-	-	12	82	-	-	-	173	41	7	-	2,220
(19)	General Plant	1,210	776	829	5,529	6,036	104	61	517	23	174	46	676	-	-	7,844	2,440	587	2,000	-	28,852
(20)	Maintenance	-	-	-	2,768	-	-	-	-	58	-	5	138	-	-	-	274	66	58	-	3,567
(21)	Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,100	2,100
(22)	Grace Proj. Mgmt. Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,608	16,608
(23)	Ammonia Synthesis	15,593	-	-	-	3,337	-	-	-	-	290	-	-	910	-	11	2,807	-	2,186	-	25,134
(24)	Ammonia Shipping and Storage	6,965	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	6,983
(25)	TCGP License Fee	-	-	-	-	-	-	-	-	-	-	-	-	1,782	-	-	-	-	-	-	1,782
(26)	Training Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,240	4,240
(27)	Subtotal	\$150,335	\$21,792	\$5,601	\$23,181	\$56,758	\$5,359	\$6,969	\$32,240	\$3,035	\$1,332	\$5,281	\$4,646	\$4,066	\$4,898	\$7,873	\$30,897	\$6,761	\$23,191	\$22,930	\$417,163
(28)	G&A Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,882	9,882
(29)	Total	\$150,335	\$21,792	\$5,601	\$23,181	\$56,758	\$5,359	\$6,969	\$32,240	\$3,035	\$1,332	\$5,281	\$4,646	\$4,066	\$4,898	\$7,873	\$30,897	\$6,761	\$23,191	\$22,930	\$427,045

(a) For definitions of inclusions within cost centers see Allocation Method.

Base Fixed Asset Spending

As indicated in Deliverable No. 23, a separate spending pattern for each cost center was prepared based on the engineering, procurement and construction schedules presented in Deliverable No. 36 - Demonstration Plant Construction Plan. These spending patterns were developed on the basis of percentages of base cost expected to be expended during each quarter of Phase II. These spending patterns are indicated in Table 2 and their application to the fixed asset portion of each cost center reflected in Table 3. It should be noted that Table 3 excludes the fee from the spending estimate.

(Tables 2 and 3 follow)

TABLE 2
AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY
BASE CAPITAL SPENDING FRACTIONS

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Line		Quarter of Phase II														
No.	Capital Cost Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
(1)	Docking Facility	-	0.016	0.076	0.201	0.311	0.249	0.113	0.034	-	-	-	-	-	-	1.000
(2)	Coal Handling, Crushing and Storage	0.003	0.008	0.023	0.053	0.087	0.150	0.194	0.166	0.140	0.101	0.044	0.020	0.011	-	1.000
(3)	Slurry Preparation	-	0.003	0.010	0.025	0.066	0.110	0.167	0.193	0.182	0.127	0.070	0.031	0.016	-	1.000
(4)	Coal Gasification	0.003	0.006	0.023	0.041	0.081	0.126	0.165	0.174	0.155	0.110	0.060	0.037	0.013	0.006	1.000
(5)	Carbon/Ash Separation	-	0.005	0.013	0.033	0.072	0.122	0.173	0.183	0.171	0.116	0.066	0.030	0.016	-	1.000
(6)	CO Shift	-	0.003	0.010	0.025	0.066	0.110	0.167	0.198	0.175	0.129	0.070	0.031	0.016	-	1.000
(7)	Acid Gas Removal	-	-	0.008	0.017	0.039	0.079	0.131	0.168	0.182	0.164	0.106	0.060	0.030	0.016	1.000
(8)	Nitrogen Wash	-	-	0.006	0.021	0.058	0.129	0.190	0.230	0.185	0.114	0.049	0.018	-	-	1.000
(9)	Air Separation	-	0.005	0.014	0.039	0.085	0.141	0.198	0.185	0.166	0.094	0.047	0.019	0.007	-	1.000
(10)	Sulfur Recovery/Shipping	-	-	0.003	0.011	0.029	0.079	0.132	0.191	0.212	0.161	0.105	0.051	0.019	0.007	1.000
(11)	Steam Generation/Distribution	-	-	0.003	0.010	0.025	0.066	0.110	0.167	0.193	0.180	0.129	0.070	0.031	0.016	1.000
(12)	Raw Water	-	-	0.003	0.013	0.043	0.097	0.178	0.222	0.209	0.139	0.068	0.021	0.007	-	1.000
(13)	Cooling Water	-	-	0.004	0.016	0.060	0.143	0.223	0.243	0.186	0.088	0.029	0.008	-	-	1.000
(14)	Treated Water	-	-	-	0.011	0.032	0.087	0.169	0.237	0.206	0.152	0.074	0.024	0.008	-	1.000
(15)	Waste Treatment	-	-	0.004	0.014	0.046	0.114	0.186	0.237	0.203	0.124	0.055	0.017	-	-	1.000
(16)	Ash Disposal	-	-	-	0.005	0.014	0.039	0.085	0.141	0.203	0.192	0.157	0.091	0.047	0.026	1.000
(17)	Electrical Supply	0.002	0.005	0.015	0.029	0.021	0.102	0.192	0.088	0.145	0.126	0.112	0.097	0.059	0.007	1.000
(18)	Railroad Service	-	-	0.019	0.089	0.236	0.320	0.230	0.088	0.018	-	-	-	-	-	1.000
(19)	General Plant	0.003	0.011	0.031	0.077	0.133	0.190	0.199	0.174	0.105	0.051	0.019	0.007	-	-	1.000
(20)	Maintenance	0.005	0.118	0.300	0.077	0.005	0.013	0.037	0.066	0.102	0.110	0.085	0.051	0.022	0.009	1.000
(21)	Land	-	-	1.000	-	-	-	-	-	-	-	-	-	-	-	1.000
(22)	Grace Proj. Mgmt. Costs(a)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(23)	Ammonia Compression/Synthesis	0.001	-	0.051	0.051	0.055	0.013	0.040	0.044	0.055	0.068	0.074	0.100	0.202	0.246	1.000
(24)	Ammonia Storage & Shipping	-	-	-	-	-	0.016	0.067	0.064	0.122	0.129	0.129	0.172	0.172	0.129	1.000
(25)	Texaco License Fee	0.180	-	-	-	-	-	-	-	-	-	-	-	-	0.720	1.000
(26)	Training Costs(a)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(27)	Grace G&A Expense (b)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

(a) Details of costs to be extracted from other calculations.

(b) To be based on percentage of costs expended in each quarter.

TABLE 2
AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY
BASE CAPITAL SPENDING FRACTIONS

TABLE 3

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY BASE CAPITAL SPENDING
(Ex Fee) - \$000 - 2/15/79

Line No.	Capital Cost Category	Base Capital (Ex Fee)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1)	Docking Facility	\$ 4,051.0	-	\$ 64.8	\$ 307.9	\$ 814.2	\$ 1,259.9	\$ 1,008.7	\$ 457.8	\$ 137.7	-	-	-	-	-	-	-
(2)	Coal Handling, Crushing and Storage	33,216.0	\$ 99.6	265.7	764.0	1,760.5	2,889.8	4,982.4	6,443.9	5,513.9	\$ 4,650.2	\$ 3,354.8	\$ 1,461.5	\$ 604.3	\$ 365.4	-	-
(3)	Slurry Preparation	7,875.0	-	23.6	78.8	196.9	519.8	866.3	1,315.1	1,519.9	1,433.2	1,000.1	551.2	244.1	126.0	-	-
(4)	Coal Gasification	47,746.0	143.2	286.5	1,098.1	1,957.6	3,867.4	6,016.0	7,878.1	8,307.8	7,400.6	5,252.1	2,864.8	1,766.6	620.7	\$ 286.5	-
(5)	Carbon/Ash Separation	11,932.0	-	59.7	155.1	393.8	859.1	1,455.7	2,064.2	2,183.5	2,040.4	1,384.1	787.5	358.0	190.9	-	-
(6)	CO Shift	14,083.0	-	42.3	140.8	352.1	929.5	1,549.1	2,351.9	2,788.4	2,464.5	1,816.7	985.8	436.6	225.3	-	-
(7)	Acid Gas Removal	24,452.0	-	-	195.6	415.7	953.6	1,931.7	3,203.2	4,108.0	4,450.3	4,010.1	2,591.9	1,467.1	733.6	391.2	-
(8)	Nitrogen Wash	5,349.0	-	-	32.1	112.3	310.2	690.0	1,016.3	1,230.3	989.6	609.8	262.1	96.3	-	-	-
(9)	Air Separation	28,708.0	-	143.5	401.9	1,119.6	2,440.2	4,047.8	5,684.2	5,311.0	4,765.5	2,498.6	1,349.3	545.4	201.0	-	-
(10)	Sulfur Recovery/Shipping	18,200.0	-	-	54.6	200.2	527.8	1,437.8	2,402.4	3,476.2	3,858.4	2,930.2	1,911.0	928.2	345.8	127.4	-
(11)	Steam Generation/Distribution	67,268.0	-	-	201.8	672.7	1,681.7	4,439.7	7,399.5	11,233.7	12,982.7	12,108.2	8,677.6	4,708.8	2,085.3	1,076.3	-
(12)	Raw Water	7,691.0	-	-	23.1	100.0	330.7	746.0	1,369.0	1,707.4	1,607.4	1,069.1	523.0	161.5	53.8	-	-
(13)	Cooling Water	17,680.0	-	-	70.7	282.9	1,060.8	2,528.3	3,942.6	4,296.2	3,288.5	1,555.8	512.7	141.5	-	-	-
(14)	Treated Water	3,568.0	-	-	-	39.3	114.2	310.4	603.0	845.6	735.0	542.3	264.0	85.6	28.6	-	-
(15)	Waste Treatment	6,018.0	-	-	24.1	84.3	276.8	686.0	1,119.3	1,426.3	1,221.7	746.2	331.0	102.3	-	-	-
(16)	Ash Disposal	19,046.0	-	-	-	95.2	266.7	742.8	1,618.9	2,685.5	3,866.3	3,656.8	2,990.2	1,733.2	895.2	495.2	-
(17)	Electrical Supply	2,927.0	5.9	14.6	43.9	84.9	61.5	298.5	562.0	257.6	424.4	368.8	327.8	283.9	172.7	20.5	-
(18)	Railroad Service	2,179.0	-	-	41.4	193.9	514.2	697.3	501.2	191.8	39.2	-	-	-	-	-	-
(19)	General Plant	28,265.0	84.8	310.9	876.2	2,176.4	3,759.3	5,370.4	5,624.7	4,918.1	2,967.8	1,441.5	537.0	197.9	-	-	-
(20)	Maintenance	3,301.0	16.5	389.5	990.3	254.2	16.5	42.9	122.1	217.9	336.7	363.1	280.6	168.4	72.6	29.7	-
(21)	Land	2,099.8	-	-	2,099.8	-	-	-	-	-	-	-	-	-	-	-	-
(22)	Grace Proj Mgmt	16,608.0	348.7	328.2	341.2	4,170.3	381.3	398.9	407.1	4,186.8	399.7	391.8	381.0	4,191.4	345.3	336.3	-
(23)	Ammonia Compression	25,134.0	25.1	-	1,281.8	1,281.8	1,382.4	326.7	1,005.4	1,105.9	1,382.4	1,709.1	1,859.9	2,513.4	5,077.1	6,183.0	-
(24)	Ammonia Storage & Shipping	6,983.0	-	-	-	-	-	111.7	467.9	446.9	851.9	900.8	900.8	1,201.1	1,201.1	900.8	-
(25)	Texaco License	1,781.9	320.0	-	-	-	-	-	-	-	-	-	-	-	-	1,461.9	-
(26)	Training Costs	4,240.0	-	39.2	34.4	34.4	38.0	99.9	67.9	189.7	229.0	276.3	395.8	533.5	936.5	1,365.4	-
(27)	Subtotal	\$410,401.7	\$1,043.8	\$1,968.5	\$9,257.6	\$16,793.2	\$24,441.4	\$40,785.0	\$57,627.7	\$68,286.1	\$62,385.4	\$48,186.3	\$30,746.5	\$22,529.1	\$13,676.9	\$12,674.2	-
(28)	G&A Expense	9,882.0	25.1	47.4	222.9	404.4	588.5	982.1	1,387.6	1,644.3	1,502.2	1,160.3	740.3	542.4	329.3	705.2	-
(29)	Total	\$420,283.7	\$1,068.9	\$2,015.9	\$9,480.5	\$17,197.6	\$25,029.9	\$41,767.1	\$59,015.3	\$69,930.4	\$63,887.6	\$49,346.6	\$31,486.8	\$23,071.5	\$14,006.2	\$12,979.4	-

TABLE 3

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY BASE CAPITAL SPENDING
(Ex Fee) - \$000 - 2/15/79

Escalated Fixed Asset Spending

Having established the base fixed asset spending per Table 3 and allowing the seven percent annual escalation as directed by DOE, a forward-priced fixed asset spending schedule is developed and presented in Table 4.

Details of the escalation factors for each quarter of Phase II can be found in Section IV of this document.

(Table 4 follows)

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY
ESCALATED FIXED ASSET SPENDING
(Excluding Fee)
(\$000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
Line No.	Capital Cost Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Quarter of Phase II																
(1)	Docking Facility	-	\$ 70.9	\$ 342.7	\$ 921.7	\$ 1,450.6	\$ 1,181.2	\$ 545.2	\$ 166.8	-	-	-	-	-	-	\$ 4,679.1
(2)	Coal Handling, Crushing and Storage	\$ 107.2	290.8	850.4	1,993.0	3,327.2	5,834.5	7,674.6	6,679.0	\$ 5,728.9	\$ 4,203.5	\$ 1,862.5	\$ 861.0	\$ 481.7	-	39,894.3
(3)	Slurry Preparation	-	25.8	87.7	222.9	598.5	1,014.4	1,566.3	1,841.1	1,765.7	1,253.1	702.4	316.4	166.1	-	9,560.4
(4)	Coal Gasification	154.1	313.5	1,222.3	2,216.1	4,452.8	7,044.8	9,382.7	10,063.3	9,117.3	6,580.8	3,650.8	2,289.7	818.2	\$ 384.1	57,690.5
(5)	Carbon/Ash Separation	-	65.3	172.6	445.8	989.1	1,704.6	2,458.4	2,644.9	2,513.7	1,734.3	1,003.6	464.0	251.6	-	14,447.9
(6)	CO Shift	-	46.3	156.7	398.6	1,070.2	1,814.0	2,801.1	3,377.6	3,036.2	2,276.3	1,256.3	565.9	297.0	-	17,096.2
(7)	Acid Gas Removal	-	-	217.7	470.6	1,097.9	2,262.0	3,815.0	4,976.0	5,482.6	5,024.6	3,303.0	1,901.5	967.0	524.5	30,042.4
(8)	Nitrogen Wash	-	-	35.7	127.1	357.2	808.0	1,210.4	1,490.3	1,219.2	764.1	334.0	124.8	-	-	6,470.8
(9)	Air Separation	-	157.0	447.3	1,267.5	2,809.6	4,740.0	6,769.8	6,433.2	5,870.9	3,381.3	1,719.5	706.9	265.0	-	34,568.0
(10)	Sulfur Recovery/Shipping	-	-	60.8	226.6	607.7	1,683.7	2,861.2	4,210.7	4,753.4	3,671.5	2,435.3	1,203.0	455.8	170.8	22,340.5
(11)	Steam Generation/Distribution	-	-	224.6	761.5	1,936.3	5,198.9	8,812.7	13,607.5	15,994.3	15,171.4	11,058.4	6,103.1	2,748.9	1,443.0	83,060.6
(12)	Raw Water	-	-	25.7	113.2	380.8	873.6	1,630.5	2,068.2	1,980.3	1,339.6	666.5	209.3	70.9	-	9,358.6
(13)	Cooling Water	-	-	78.7	320.3	1,221.4	2,960.7	4,695.6	5,204.0	4,051.3	1,949.4	653.4	183.4	-	-	21,318.2
(14)	Treated Water	-	-	-	44.5	131.5	363.5	718.2	1,024.3	905.5	679.5	336.4	110.9	37.7	-	4,352.0
(15)	Waste Treatment	-	-	26.8	95.4	318.7	803.3	1,333.1	1,727.7	1,505.1	935.0	421.8	132.6	-	-	7,299.5
(16)	Ash Disposal	-	-	-	107.8	307.1	869.8	1,928.1	3,253.0	4,763.2	4,581.9	3,810.6	2,246.4	1,180.1	663.9	23,711.9
(17)	Electrical Supply	6.3	16.0	48.9	96.1	70.8	349.5	669.3	312.0	522.8	462.1	417.7	368.0	227.7	27.5	3,594.7
(18)	Railroad Service	-	-	46.1	219.5	592.0	816.5	596.9	232.3	48.3	-	-	-	-	-	2,551.6
(19)	General Plant	91.2	340.2	975.3	2,463.8	4,328.4	6,288.8	6,699.0	5,957.3	3,656.2	1,806.7	684.3	256.5	-	-	33,547.2
(20)	Maintenance	17.8	426.3	1,102.3	287.8	19.0	50.2	145.4	263.9	414.8	455.0	357.6	218.3	95.7	39.8	3,893.9
(21)	Land	-	-	2,337.2	-	-	-	-	-	-	-	-	-	-	-	2,337.2
(22)	Grace Proj Mgmt	375.2	359.2	379.8	4,721.0	439.0	467.1	484.9	5,071.5	492.4	490.9	485.5	5,432.5	455.2	450.9	20,105.1
(23)	Ammonia Compression	27.0	-	1,426.7	1,451.1	1,591.7	382.6	1,197.4	1,339.6	1,703.1	2,141.5	2,370.2	3,257.6	6,692.7	8,289.5	31,870.7
(24)	Ammonia Storage & Shipping	-	-	-	-	-	130.8	557.3	541.3	1,049.5	1,128.7	1,147.9	1,556.7	1,583.3	1,207.7	8,903.2
(25)	Texaco License Fee	344.3	-	-	-	-	-	-	-	-	-	-	-	-	1,960.0	2,304.3
(26)	Training Costs	-	42.9	38.3	38.9	43.8	117.0	80.9	229.8	282.1	346.2	504.4	691.5	1,234.5	1,830.6	5,480.9
(27)	Subtotal	\$1,123.1	\$2,154.2	\$10,304.3	\$19,010.8	\$28,141.3	\$47,759.5	\$68,634.0	\$82,715.3	\$76,856.8	\$60,376.9	\$39,182.1	\$29,200.0	\$18,029.1	\$16,992.3	\$500,479.7
(28)	G&A Expense	27.0	51.9	248.1	457.8	677.6	1,150.1	1,652.6	1,991.8	1,850.7	1,453.8	643.4	703.0	434.1	409.2	12,051.1
(29)	Total	\$1,150.1	\$2,206.1	\$10,552.4	\$19,468.6	\$28,818.9	\$48,909.6	\$70,286.6	\$84,707.1	\$78,707.5	\$61,830.7	\$40,125.5	\$29,903.0	\$18,463.2	\$17,401.5	\$512,530.8

Fee Payments

The fixed fee portion of the Phase II capital cost is not subject to escalation and, therefore, was not included in the preceding Tables 3 and 4. It is assumed that the spending percentages of Table 2 apply to fee, with the resultant fee spending pattern being indicated in Table 5.

(Table 5 follows)

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

PHASE II FEE PAYMENTS
(\$000)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Line		Total	Quarter of Phase II														
No.	Capital Cost Category	Fee	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(1)	Docking Facility	\$ 81.0	-	\$ 1.3	\$ 6.2	\$ 16.3	\$ 25.2	\$ 20.2	\$ 9.1	\$ 2.7	-	-	-	-	-	-	\$ 81.0
(2)	Coal Handling, Crushing and Storage	945.0	\$2.8	7.6	21.7	50.1	82.2	141.8	183.3	156.9	\$ 132.3	\$ 95.4	\$ 41.6	\$ 18.9	\$ 10.4	-	945.0
(3)	Slurry Preparation	147.0	-	0.4	1.5	3.7	9.7	16.2	24.5	28.4	26.7	18.7	10.3	4.6	2.3	-	147.0
(4)	Coal Gasification	1,203.0	3.6	7.2	27.7	49.3	97.4	151.6	198.5	209.3	186.5	132.3	72.2	44.5	15.7	\$ 7.2	1,203.0
(5)	Carbon/Ash Separation	225.0	-	1.1	2.9	7.4	16.2	27.4	38.9	41.2	38.5	26.1	14.9	6.8	3.6	-	225.0
(6)	CO Shift	265.0	-	0.8	2.6	6.6	17.5	29.2	44.3	52.5	46.4	34.2	18.5	8.2	4.2	-	265.0
(7)	Acid Gas Removal	125.0	-	-	1.0	2.1	4.9	9.9	16.4	21.0	22.7	20.5	13.2	7.5	3.8	2.0	125.0
(8)	Nitrogen Wash	22.0	-	-	0.1	0.5	1.3	2.8	4.2	5.0	4.1	2.5	1.1	0.4	-	-	22.0
(9)	Air Separation	66.0	-	0.3	0.9	2.6	5.6	9.3	13.1	12.2	11.0	6.2	3.1	1.2	0.5	-	66.0
(10)	Sulfur Recovery/Shipping	172.0	-	-	0.5	1.9	5.0	13.6	22.7	32.8	36.5	27.7	18.0	8.8	3.3	1.2	172.0
(11)	Steam Generation/Distribution	1,683.0	-	-	5.1	16.8	42.1	111.1	185.1	281.1	324.8	302.9	217.1	117.8	52.2	26.9	1,683.0
(12)	Raw Water	147.0	-	-	0.5	1.9	6.3	14.3	26.2	32.6	30.7	20.4	10.0	3.1	1.0	-	147.0
(13)	Cooling Water	373.0	-	-	1.5	6.0	22.4	53.3	83.2	90.6	69.4	32.8	10.8	3.0	-	-	373.0
(14)	Treated Water	68.0	-	-	-	0.8	2.2	5.9	11.5	16.1	14.0	10.4	5.0	1.6	0.5	-	68.0
(15)	Waste Treatment	101.0	-	-	0.4	1.4	4.7	11.5	18.8	23.9	20.5	12.5	5.6	1.7	-	-	101.0
(16)	Ash Disposal	394.0	-	-	-	2.0	5.5	15.4	33.5	55.6	80.0	75.6	61.9	35.8	18.5	10.2	394.0
(17)	Electrical Supply	50.0	0.1	0.2	0.8	1.4	1.0	5.1	9.6	4.4	7.3	6.3	5.6	4.8	3.0	0.4	50.0
(18)	Railroad Service	41.0	-	-	0.8	3.7	9.7	13.1	9.4	3.6	0.7	-	-	-	-	-	41.0
(19)	General Plant	587.0	1.8	6.5	18.2	45.2	78.1	111.5	116.8	102.1	61.6	29.9	11.2	4.1	-	-	587.0
(20)	Maintenance	66.0	0.3	7.8	19.8	5.1	0.3	0.9	2.4	4.4	6.7	7.3	5.6	3.4	1.4	0.6	66.0
(21)	Total	\$6,761.0	\$8.6	\$33.2	\$112.2	\$224.8	\$437.3	\$764.1	\$1,051.5	\$1,176.4	\$1,120.4	\$861.7	\$525.7	\$276.2	\$120.4	\$48.5	\$6,761.0

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

PHASE II FEE PAYMENTS
(\$000)

Integrated Facility Escalated Spending

The summation of the escalated fixed asset spending of Table 4 and the fee payments of Table 5 produces a total Integrated Facility capital spending estimate. This estimate, totaling \$519,291,800, is detailed on the following Table 6.

(Table 6 follows)

TABLE 6

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY ESCALATED SPENDING
(Including Fee) - \$000

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY ESCALATED SPENDING
(Including Fee) - \$000

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Line		Quarter of Phase II														
No.	Capital Cost Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
(1)	Docking Facility	-	\$ 72.2	\$ 348.9	\$ 938.0	\$ 1,475.8	\$ 1,201.4	\$ 554.3	\$ 169.5	-	-	-	-	-	-	\$ 4,760.1
(2)	Coal Handling, Crushing and Storage	\$ 110.0	298.4	872.1	2,043.1	3,409.4	5,976.3	7,857.9	6,835.9	\$ 5,861.2	\$ 4,298.9	\$ 1,904.1	\$ 879.9	\$ 492.1	-	40,839.3
(3)	Slurry Preparation	-	26.2	89.2	226.6	608.2	1,030.6	1,590.8	1,869.5	1,792.4	1,271.8	712.7	321.0	168.4	-	9,707.4
(4)	Coal Gasification	157.7	320.7	1,250.0	2,265.4	4,550.2	7,196.4	9,581.2	10,272.6	9,303.8	6,713.1	3,723.0	2,334.2	833.9	\$ 391.3	58,893.5
(5)	Carbon/Ash Separation	-	66.4	175.5	453.2	1,005.3	1,732.0	2,497.3	2,686.1	2,552.2	1,760.4	1,018.5	470.8	255.2	-	14,672.9
(6)	CO Shift	-	47.1	159.3	405.2	1,087.7	1,843.2	2,845.4	3,430.1	3,082.6	2,310.5	1,274.8	574.1	301.2	-	17,361.2
(7)	Acid Gas Removal	-	-	218.7	472.7	1,102.8	2,271.9	3,831.4	4,997.0	5,505.3	5,045.1	3,316.2	1,909.0	970.8	526.5	30,167.4
(8)	Nitrogen Wash	-	-	35.8	127.6	358.5	810.8	1,214.6	1,495.3	1,223.3	766.6	335.1	125.2	-	-	6,492.8
(9)	Air Separation	-	157.3	448.2	1,270.1	2,815.2	4,749.3	6,782.9	6,445.4	5,881.9	3,387.5	1,722.6	708.1	265.5	-	34,634.0
(10)	Sulfur Recovery/Shipping	-	-	61.3	228.5	612.7	1,697.3	2,883.9	4,243.5	4,789.9	3,699.2	2,453.3	1,211.8	459.1	172.0	22,512.5
(11)	Steam Generation/Distribution	-	-	229.7	778.3	1,978.4	5,310.0	8,997.8	13,888.6	16,319.1	15,474.3	11,275.5	6,220.9	2,801.1	1,469.9	84,743.6
(12)	Raw Water	-	-	26.2	115.1	387.1	887.9	1,656.7	2,100.8	2,011.0	1,360.0	676.5	212.4	71.9	-	9,505.6
(13)	Cooling Water	-	-	80.2	326.3	1,243.8	3,014.0	4,778.8	5,294.6	4,120.7	1,982.2	664.2	186.4	-	-	21,691.2
(14)	Treated Water	-	-	-	45.3	133.7	369.4	729.7	1,040.4	919.5	689.9	341.4	112.5	38.2	-	4,420.0
(15)	Waste Treatment	-	-	27.2	96.8	323.4	814.8	1,351.9	1,751.6	1,525.6	947.5	427.4	134.3	-	-	7,400.5
(16)	Ash Disposal	-	-	-	109.8	312.6	885.2	1,961.6	3,308.6	4,843.2	4,657.5	3,872.5	2,282.2	1,198.6	674.1	24,105.9
(17)	Electrical Supply	6.4	16.2	49.7	97.5	71.8	354.6	678.9	316.4	530.1	468.4	423.3	372.8	230.7	27.9	3,644.7
(18)	Railroad Service	-	-	46.9	223.7	601.7	829.6	606.3	235.9	49.0	-	-	-	-	-	2,592.6
(19)	General Plant	93.0	346.7	993.5	2,509.0	4,406.5	6,400.3	6,815.8	6,059.4	3,717.8	1,836.1	695.5	260.6	-	-	34,134.2
(20)	Maintenance	18.1	434.1	1,122.1	292.9	19.3	51.1	147.8	268.3	421.5	462.3	363.2	221.7	97.1	40.4	3,959.9
(21)	Land	-	-	2,337.2	-	-	-	-	-	-	-	-	-	-	-	2,337.2
(22)	Grace Proj. Mgmt. Costs	375.2	359.2	379.8	4,721.0	439.0	467.1	484.9	5,071.5	492.4	490.9	485.5	5,432.5	455.2	450.9	20,105.1
(23)	Ammonia Compression/Shipping	27.0	-	1,426.7	1,451.1	1,591.7	382.6	1,197.4	1,339.6	1,703.1	2,141.5	2,370.2	3,257.6	6,692.7	8,289.5	31,870.7
(24)	Ammonia Storage & Shipping	-	-	-	-	-	130.8	557.3	541.3	1,049.5	1,128.7	1,147.9	1,556.7	1,583.3	1,207.7	8,903.2
(25)	Texaco License Fee	344.3	-	-	-	-	-	-	-	-	-	-	-	-	1,960.0	2,304.3
(26)	Training Costs	-	42.9	38.3	38.9	43.8	117.0	80.9	229.8	282.1	346.2	504.4	691.5	1,234.5	1,830.6	5,480.9
(27)	Subtotal	\$1,131.7	\$2,187.4	\$10,416.5	\$19,235.6	\$28,578.6	\$48,523.6	\$69,685.5	\$83,891.7	\$77,977.2	\$61,238.6	\$39,707.8	\$29,476.2	\$18,149.5	\$17,040.8	\$507,240.7
(28)	G&A Expense	27.0	51.9	248.1	457.8	677.6	1,150.1	1,652.6	1,991.8	1,850.7	1,453.8	943.4	703.0	434.1	409.2	12,051.1
(29)	Total	\$1,158.7	\$2,239.3	\$10,664.6	\$19,693.4	\$29,256.2	\$49,673.7	\$71,338.1	\$85,883.5	\$79,827.9	\$62,692.4	\$40,651.2	\$30,179.2	\$18,583.6	\$17,450.0	\$519,291.8

Capital Allocation and Cost Sharing

The escalated spending, as presented in Table 6, serves as the basis for application of the Allocation Method. An initial segregation on the basis of utilization allocations, followed by capital ratio allocations, results in a split between the Demonstration Plant and the Ammonia Plant of \$455,856,800 and \$63,435,000, respectively. The further subdivision of these costs in accordance with the cost sharing requirements of the Prime Contract gives a DOE share of \$227,928,400 and a Grace share of \$291,363,400. The derivation of these estimates is indicated in Table 7 on the following page.

Again it should be noted that this estimate reflects a DOE-directed seven percent annual escalation rate and does not represent Grace's best estimate of the capital cost of the Integrated Facility.

(Table 7 follows)

TABLE 7

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY ALLOCATED CAPITAL COSTS

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Line No.	Capital Cost Category	Escalated Capital Cost (\$000)	Utilization Allocations				Remaining Capital To Be Allocated	Capital Allocations				Integrated Facility Allocated Costs				Integrated Facility Cost Sharing Detail			
			Fraction To		Amount (\$000) to			Fraction To		Amount (\$000) to		Fraction To		Amount (\$000) to		DOE Share		Grace Share	
			Demonstration Plant	Ammonia Plant	Demonstration Plant	Ammonia Plant		Demonstration Plant	Ammonia Plant	Demonstration Plant	Ammonia Plant	Demonstration Plant	Ammonia Plant	Demonstration Plant	Ammonia Plant	Fraction	Amount (\$000)	Fraction	Amount (\$000)
(1)	Docking Facility	\$ 4,760.1	0.656	0.344	\$ 3,122.6	\$ 1,637.5	-	-	-	-	-	0.656	0.344	\$ 3,122.6	\$ 1,637.5	0.328	\$ 1,561.30	0.672	\$ 3,198.80
(2)	Coal Handling, Crushing and Storage	40,839.3	1.000	-	40,839.3	-	-	-	-	-	-	1.000	-	40,839.3	-	0.500	20,419.65	0.500	20,419.65
(3)	Slurry Preparation	9,707.4	1.000	-	9,707.4	-	-	-	-	-	-	1.000	-	9,707.4	-	0.500	4,853.70	0.500	4,853.70
(4)	Coal Gasification	58,893.5	1.000	-	58,893.5	-	-	-	-	-	-	1.000	-	58,893.5	-	0.500	29,446.75	0.500	29,446.75
(5)	Carbon/Ash Separation	14,672.9	1.000	-	14,672.9	-	-	-	-	-	-	1.000	-	14,672.9	-	0.500	7,336.45	0.500	7,336.45
(6)	CO Shift	17,361.2	1.000	-	17,361.2	-	-	-	-	-	-	1.000	-	17,361.2	-	0.500	8,680.60	0.500	8,680.60
(7)	Acid Gas Removal	30,167.4	1.000	-	30,167.4	-	-	-	-	-	-	1.000	-	30,167.4	-	0.500	15,083.70	0.500	15,083.70
(8)	Nitrogen Wash	6,492.8	0.967	0.033	6,278.5	214.3	-	-	-	-	-	0.967	0.033	6,278.5	214.3	0.500	3,139.25	0.517	3,353.55
(9)	Air Separation	34,634.0	1.000	-	34,634.0	-	-	-	-	-	-	1.000	-	34,634.0	-	0.500	17,317.00	0.500	17,317.00
(10)	Sulfur Recovery/Shipping	22,512.5	1.000	-	22,512.5	-	-	-	-	-	-	1.000	-	22,512.5	-	0.500	11,256.25	0.500	11,256.25
(11)	Steam Generation/Distribution	84,743.6	1.000	-	84,743.6	-	-	-	-	-	-	1.000	-	84,743.6	-	0.500	42,371.80	0.500	42,371.80
(12)	Raw Water	9,505.6	0.733	0.209	6,967.6	1,986.7	\$ 551.3	0.878	0.122	\$ 484.0	\$ 67.3	0.784	0.216	7,451.6	2,054.0	0.392	3,725.80	0.608	5,779.80
(13)	Cooling Water	21,691.2	0.700	0.300	15,183.8	6,507.4	-	-	-	-	-	0.700	0.300	15,183.8	6,507.4	0.350	7,591.90	0.650	14,099.30
(14)	Treated Water	4,420.0	0.917	-	4,053.1	-	366.9	0.878	0.122	322.1	44.8	0.990	0.010	4,375.2	44.8	0.495	2,187.60	0.505	2,232.40
(15)	Waste Treatment	7,400.5	0.794	0.053	5,876.0	392.2	1,132.3	0.878	0.122	994.0	138.3	0.928	0.072	6,870.0	530.5	0.464	3,435.00	0.536	3,965.50
(16)	Ash Disposal	24,105.9	1.000	-	24,105.9	-	-	-	-	-	-	1.000	-	24,105.9	-	0.500	12,052.95	0.500	12,052.95
(17)	Electrical Supply	3,644.7	0.820	0.116	2,988.7	422.8	233.2	0.878	0.122	204.7	28.5	0.876	0.124	3,193.4	451.3	0.438	1,596.70	0.562	2,048.00
(18)	Railroad Service	2,592.6	0.671	0.329	1,739.6	853.0	-	-	-	-	-	0.671	0.329	1,739.6	853.0	0.335	869.80	0.665	1,722.80
(19)	General Plant	34,134.2	-	-	-	-	34,134.2	0.878	0.122	29,964.7	4,169.5	0.878	0.122	29,964.7	4,169.5	0.439	14,982.35	0.561	19,151.85
(20)	Maintenance	3,959.9	-	-	-	-	3,959.9	0.878	0.122	3,476.2	483.7	0.878	0.122	3,476.2	483.7	0.439	1,738.10	0.561	2,221.80
(21)	Land	2,337.2	-	-	-	-	2,337.2	0.878	0.122	2,051.7	285.5	0.878	0.122	2,051.7	285.5	0.439	1,025.85	0.561	1,311.35
(22)	Grace Proj Mgmt	20,105.1	-	-	-	-	20,105.1	0.878	0.122	17,649.3	2,455.8	0.878	0.122	17,649.3	2,455.8	0.439	8,824.65	0.561	11,280.45
(23)	Ammonia Compression	31,870.7	-	1.000	-	31,870.7	-	-	-	-	-	-	1.000	-	31,870.7	-	-	1.000	31,870.70
(24)	Ammonia Storage & Shipping	8,903.2	-	1.000	-	8,903.2	-	-	-	-	-	-	1.000	-	8,903.2	-	-	1.000	8,903.20
(25)	Texaco License Fee	2,304.3	-	1.000	-	2,304.3	-	-	-	-	-	-	1.000	-	2,304.3	-	-	1.000	2,304.30
(26)	Training Costs	5,480.9	-	-	-	-	5,480.9	0.878	0.122	4,811.4	669.5	0.878	0.122	4,811.4	669.5	0.439	2,405.70	0.561	3,075.20
(27)	Subtotal	\$507,240.7	0.874	0.126	\$383,847.6	\$55,092.1	\$68,301.0	0.878	0.122	\$59,958.1	\$8,342.9	0.875	0.125	\$443,805.7	\$63,435.0	0.437	\$221,902.85	0.563	\$285,337.85
(28)	G&A Expense	\$ 12,051.1	1.000	-	\$ 12,051.1	-	-	-	-	-	-	1.000	-	\$ 12,051.1	-	0.500	\$ 6,025.55	0.500	\$ 6,025.55
(29)	Total	\$519,291.8	0.878	0.122	\$395,898.7	\$55,092.1	\$68,301.0	0.878	0.122	\$59,958.1	\$8,342.9	0.878	0.122	\$455,856.8	\$63,435.0	0.439	\$227,928.40	0.561	\$291,363.40

SECTION III

CURRENT WORKING ESTIMATE FOR PHASE III

Consistent with the previous presentation applicable to Phase II, the following pages will present the summary estimates of Phase III operating costs, allowing for a seven percent annual escalation rate. Also consistent with the Phase III costs of Deliverable No. 23, it should be noted that both depreciation and product and by-product revenues have been excluded from the following estimates. The operational philosophy serving as the basis for the following costs is as extracted from Deliverable No. 37 - Demonstration Plant Operation Plan, and is identical to that utilized in the development of the operating cost portion of Deliverable No. 23.

Estimate Detail

The operating costs have been prepared in accordance with the twenty-three cost centers indicated in the Allocation Method, which are listed below.

Operating Cost Centers

1. Docking Facility	13. Ash Disposal
2. Coal Handling/Crushing
and Storage	14. Electricity
3. Slurry Preparation	15. Railroad Service
4. Coal Gasification	16. General Plant
5. Synthesis Gas Cleanup	17. Maintenance
6. Air Separation	18. Plant Administration
7. Sulfur Recovery/Shipping	19. Project Management Team
8. Steam Generation/
Distribution	20. Coal
9. Raw Water	21. Ammonia Synthesis
10. Cooling Water	22. Ammonia Shipping and Storage
11. Treated Water	23. Grace G&A Expense
12. Waste Treatment	

Those categories of costs considered within each cost center are generally as listed below, with several additional costs considered in the areas of plant administration and project administration.

Elements of Cost

1. Coal	5. Salaries and Wages
2. Chemicals	6. Benefits
3. Electricity	7. Insurance and Taxes
4. Catalyst	8. Maintenance

As indicated in the Introduction, the supporting detail for the derivation of the Phase III operating costs has previously been presented in Deliverable No. 23 and is not repeated herein. Additionally, individual cost center estimates prepared in support of the following summaries are not included in this document.

Integrated Facility Phase III Operating Costs

Table 8 on the following page indicates the total operating cost for the 27-month Phase III period. This detail includes the cost estimate by month for each of the 23 cost centers. The total operating cost, exclusive of depreciation and revenues, is indicated to be \$115,804,200.

(Table 8 follows)

TABLE 5

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY PHASE III OPERATING COSTS
BY COST CENTER ALLOWING 7% ESCALATION
\$000

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Line No.	Month of Phase III	Cost Center																								
		Docking Facility	Coal Handling	Slurry Preparation	Coal Gasification	Synthesis Gas Cleanup	Air Separation	Sulfur Recovery	Steam Generation	Raw Water	Cooling Water	Treated Water	Waste Treatment	Ash Disposal	Electricity	Railroad Service	General Plant	Maintenance	Plant Adminis.	Grace Proj Mgmt	Coal	Ammonia Synthesis	Ammonia S&S	Subtotal	Grace G&A	Total
(1)	1	\$ 21.1	\$ 86.1	\$ 22.7	\$ 117.5	\$ 114.6	\$ 54.7	\$ 55.8	\$ 137.6	\$ 16.2	\$ 39.3	\$ 15.7	\$ 15.2	\$ 37.1	\$ 304.6	\$ 12.9	\$ 42.0	\$ 834.3	\$ 181.7	\$ 115.2	\$ 83.2	\$ 58.3	\$ 23.9	\$ 2,389.7	\$ 89.0	\$ 2,478.7
(2)	2	21.2	86.6	22.8	118.2	115.2	55.0	56.1	138.4	16.3	39.6	15.7	15.3	37.3	306.3	13.0	42.2	839.0	182.8	114.5	314.9	58.6	24.1	2,633.1	99.3	2,732.4
(3)	3	21.3	87.0	23.0	118.8	115.7	55.3	56.5	139.2	16.4	39.8	15.8	15.4	37.5	308.0	13.1	42.5	843.7	183.8	115.6	568.2	58.8	24.2	2,899.6	110.3	3,009.9
(4)	4	21.4	87.5	23.1	119.5	118.0	55.6	56.8	140.0	16.4	40.0	15.9	15.5	37.7	309.8	13.1	42.7	848.5	184.9	105.5	983.2	59.1	24.3	3,318.5	127.4	3,445.9
(5)	5	21.5	88.0	23.2	120.2	118.6	56.0	57.1	140.8	16.5	40.2	16.0	15.6	37.9	311.5	13.2	43.0	853.3	185.9	99.5	1,021.9	59.4	24.5	3,363.8	129.2	3,493.0
(6)	6	21.7	88.8	23.4	120.9	121.0	56.3	57.4	142.0	16.6	40.5	16.1	15.7	38.2	313.3	13.4	43.2	858.1	186.9	100.5	1,522.4	59.7	24.6	3,880.7	150.7	4,031.4
(7)	7	21.8	89.2	23.5	121.5	121.3	56.6	57.7	142.4	16.7	40.7	16.2	15.7	38.4	315.1	13.4	43.4	863.0	188.0	101.5	1,432.4	60.0	24.7	3,803.2	147.4	3,950.6
(8)	8	22.9	90.8	23.6	122.5	124.1	56.9	58.2	150.6	16.9	41.5	16.2	15.6	40.0	327.4	15.2	43.7	867.9	189.1	100.7	1,820.6	60.4	24.9	4,229.7	165.0	4,394.7
(9)	9	23.7	92.2	23.8	123.3	126.2	57.3	58.6	156.7	17.4	44.5	16.3	17.8	41.4	410.7	16.6	44.0	872.8	190.1	101.7	1,897.1	60.7	25.0	4,417.9	172.2	4,590.1
(10)	10	22.2	90.5	23.9	123.6	119.8	57.6	58.7	144.8	17.0	41.4	16.4	16.0	39.0	320.4	13.6	44.2	877.7	191.2	101.8	51.7	61.0	25.2	2,457.7	91.4	2,549.1
(11)	11	23.1	92.2	24.0	124.5	125.6	57.9	59.1	151.9	17.1	41.8	16.5	16.7	40.4	322.2	15.1	44.5	882.7	192.3	102.4	1,792.5	61.3	25.3	4,229.1	164.9	4,394.0
(12)	12	24.2	94.0	24.2	125.5	128.3	58.3	59.6	160.3	17.8	45.5	16.6	18.3	42.3	432.1	17.1	44.7	887.7	193.4	103.4	2,018.4	61.6	25.5	4,598.8	179.5	4,778.3
(13)	13	24.4	94.5	24.3	126.2	129.0	58.6	59.9	161.2	17.9	45.8	16.7	18.4	42.5	434.5	17.2	45.0	892.7	194.5	105.7	2,030.2	62.0	25.6	4,626.8	180.6	4,807.4
(14)	14	24.4	94.9	24.4	126.9	129.4	58.9	60.3	161.2	17.9	45.6	16.8	18.3	42.5	422.5	17.1	45.2	897.8	195.6	104.1	1,974.1	62.3	25.8	4,566.0	178.1	4,744.1
(15)	15	24.7	95.6	24.6	127.6	130.3	59.3	60.6	163.0	18.1	46.3	16.9	18.6	43.0	439.4	17.4	45.5	902.9	196.7	105.1	2,054.0	62.6	25.9	4,678.1	182.6	4,860.7
(16)	16	24.7	95.9	24.7	128.3	130.7	59.6	60.9	163.0	18.1	46.1	17.0	18.5	43.0	427.3	17.2	45.8	908.0	197.8	105.3	1,997.0	62.9	26.0	4,617.8	180.1	4,797.9
(17)	17	24.9	96.6	24.8	129.1	131.6	59.9	61.3	164.9	18.3	46.8	17.1	18.8	43.1	444.4	17.5	46.0	913.1	198.9	105.7	2,077.7	63.2	26.2	4,729.9	184.6	4,914.5
(18)	18	25.1	97.2	25.0	129.8	132.3	60.3	61.6	165.8	18.4	47.1	17.1	18.9	43.7	446.9	17.7	46.3	918.3	200.0	106.9	2,089.6	63.5	26.3	4,757.8	185.7	4,943.5
(19)	19	24.8	97.3	25.1	130.4	132.1	60.6	61.9	163.9	18.3	46.0	17.2	18.4	43.4	404.5	17.1	46.5	923.4	201.2	107.1	1,891.3	63.8	26.5	4,520.8	176.0	4,696.8
(20)	20	25.4	98.3	25.3	131.3	133.6	60.9	62.3	167.7	18.6	47.6	17.3	19.1	44.2	452.0	17.9	46.8	928.7	202.3	107.7	2,113.4	64.2	26.6	4,811.2	187.8	4,999.0
(21)	21	25.4	98.7	25.4	132.0	134.0	61.3	62.1	167.7	18.6	47.4	17.4	19.0	44.3	439.5	17.8	47.1	933.9	203.4	108.7	2,055.1	64.5	26.8	4,750.1	185.3	4,935.4
(22)	22	25.7	99.4	25.6	132.7	134.9	61.6	63.0	169.6	18.8	48.2	17.5	19.3	44.7	457.1	18.1	47.3	939.2	204.6	115.1	2,138.5	64.9	26.9	4,872.7	190.2	5,062.9
(23)	23	25.7	99.8	25.7	133.5	135.4	62.0	63.3	169.6	18.8	48.0	17.6	19.2	44.8	444.5	18.0	47.6	944.5	205.7	113.5	2,079.4	65.2	27.1	4,808.9	187.6	4,996.5
(24)	24	24.0	98.0	25.8	133.8	128.5	62.3	63.4	156.7	18.4	44.8	17.7	17.3	42.2	346.8	14.7	47.8	949.8	206.9	114.6	56.1	65.4	27.2	2,662.2	99.0	2,761.2
(25)	25	26.1	101.1	26.0	135.0	137.0	62.7	64.1	172.5	19.1	49.0	17.8	19.7	45.5	464.9	18.4	48.1	955.2	208.1	114.8	2,176.2	65.8	27.4	4,954.5	193.4	5,147.9
(26)	26	26.1	101.5	26.1	135.7	137.4	63.0	64.4	172.5	19.1	48.7	17.9	19.6	45.5	452.0	18.3	48.4	960.6	209.3	115.4	2,115.8	66.2	27.6	4,891.1	190.8	5,081.9
(27)	27	26.4	102.3	26.3	136.6	138.4	63.4	64.8	174.4	19.3	49.5	18.0	19.9	46.0	470.2	18.6	48.7	966.1	210.4	115.9	2,201.4	66.5	27.7	5,010.8	195.6	5,206.4
(28)	Total	\$643.9	\$2,544.0	\$660.3	\$3,424.9	\$3,443.0	\$1,591.9	\$1,625.5	\$4,238.4	\$479.0	\$1,201.7	\$453.4	\$475.8	\$1,125.6	\$10,527.9	\$432.7	\$1,222.2	\$24,262.9	\$5,285.5	\$2,907.9	\$42,556.3	\$1,681.9	\$695.8	\$111,480.5	\$4,323.7	\$115,804.2

Allocated Phase III Operating Costs

The total Phase III costs indicated in the preceding table must be segregated in accordance with the Allocation Method into those costs applicable to the Demonstration Plant and the Ammonia Plant. These segregations are indicated in the following Tables 9 and 10. Details of the allocation methodology, including the fractional percentage of each cost center allotted to either the Demonstration Plant or the Ammonia Plant, are contained in Section III of Deliverable No. 23.

(Tables 9 and 10 follow)

TABLE 9

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

DEMONSTRATION PLANT PHASE III OPERATING COSTS
BY COST CENTER ALLOWING 7% ESCALATION
\$000

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Line No.	Month of Phase III	Cost Center																								
		Docking Facility	Coal Handling	Slurry Preparation	Coal Gasification	Synthesis Gas Cleanup	Air Separation	Sulfur Recovery	Steam Generation	Raw Water	Cooling Water	Treated Water	Waste Treatment	Ash Disposal	Electricity	Railroad Service	General Plant	Maintenance	Plant Adminis.	Grace Proj Mgmt	Coal	Ammonia Synthesis	Ammonia S&S	Subtotal	G&A	Total
(1)	1	\$ 20.9	\$ 85.2	\$ 22.7	\$ 117.5	\$ 114.6	\$ 54.7	\$ 55.2	\$ 135.4	\$ 12.6	\$ 27.4	\$ 15.6	\$ 14.0	\$ 36.7	\$ 266.8	\$ 12.8	\$ 36.8	\$ 732.5	\$ 159.8	\$ 115.2	\$ 82.2	-	-	\$ 2,113.6	\$ 89.0	\$ 2,207.6
(2)	2	21.1	86.2	22.8	118.2	115.2	55.0	55.9	136.2	12.7	27.6	15.6	14.2	37.1	268.9	12.9	37.0	736.6	161.1	114.5	313.3	-	-	2,362.1	99.3	2,461.4
(3)	3	21.2	86.6	23.0	118.8	115.7	55.3	56.2	137.0	12.7	27.8	15.7	14.3	37.3	270.4	13.0	37.3	740.8	162.0	115.6	565.4	-	-	2,626.1	110.3	2,736.4
(4)	4	16.3	87.2	23.1	119.5	118.0	55.6	56.5	137.8	12.7	27.9	15.8	14.3	37.5	271.7	11.6	36.7	745.0	159.7	105.5	979.3	-	-	3,031.7	127.4	3,159.1
(5)	5	16.4	87.6	23.2	120.2	118.6	56.0	56.9	138.5	12.8	28.1	15.9	14.4	37.7	273.2	11.7	37.0	749.2	160.8	99.5	1,017.8	-	-	3,075.5	129.2	3,204.7
(6)	6	15.4	88.5	23.4	120.9	121.0	56.3	57.2	139.7	12.9	28.3	16.0	14.5	38.1	274.8	11.4	37.0	753.4	161.0	100.5	1,517.8	-	-	3,588.1	150.7	3,738.8
(7)	7	15.4	88.9	23.5	121.5	121.3	56.6	57.6	140.1	13.0	28.4	16.1	14.5	38.3	276.3	11.4	37.2	757.7	161.8	101.5	1,428.1	-	-	3,509.3	147.4	3,656.7
(8)	8	15.0	90.6	23.6	122.5	124.1	56.9	58.0	148.2	13.1	29.0	16.1	14.4	39.9	286.8	12.4	37.2	762.0	161.5	100.7	1,815.1	-	-	3,927.1	165.0	4,092.1
(9)	9	14.6	92.0	23.8	123.3	126.2	57.3	58.4	154.2	13.5	31.1	16.2	16.4	41.2	359.8	13.1	37.3	766.3	162.4	101.7	1,891.4	-	-	4,100.2	172.2	4,272.4
(10)	10	22.0	89.8	23.9	123.6	119.8	57.6	58.2	142.5	13.2	28.9	16.3	14.8	38.7	281.0	13.5	38.7	770.6	168.5	101.8	51.3	-	-	2,174.7	91.4	2,266.1
(11)	11	15.3	91.9	24.0	124.5	125.6	57.9	59.0	149.4	13.3	29.2	16.4	15.4	40.3	282.2	12.4	37.9	775.0	165.0	102.4	1,787.1	-	-	3,924.2	164.9	4,089.1
(12)	12	14.9	93.7	24.2	125.5	128.3	58.3	59.4	157.7	13.8	31.8	16.4	16.9	42.1	378.5	13.5	37.9	779.4	165.2	103.4	2,012.3	-	-	4,273.2	179.5	4,452.7
(13)	13	15.0	94.2	24.3	126.2	129.0	58.6	59.8	158.6	13.9	32.0	16.5	16.9	42.4	380.6	13.5	38.2	783.8	166.1	105.7	2,024.1	-	-	4,299.4	180.6	4,480.0
(14)	14	15.0	94.6	24.4	126.9	129.4	58.9	60.1	158.6	13.9	31.8	16.6	16.9	42.4	370.1	13.4	38.4	788.3	167.1	104.1	1,968.2	-	-	4,239.1	178.1	4,417.2
(15)	15	15.2	95.3	24.6	127.6	130.3	59.3	60.4	160.4	14.0	32.3	16.7	17.1	42.9	384.9	13.7	38.6	792.7	168.0	105.1	2,048.8	-	-	4,346.9	182.6	4,529.5
(16)	16	15.2	95.7	24.7	128.3	130.7	59.6	60.7	160.4	14.1	32.2	16.8	17.0	42.9	374.3	13.5	38.8	797.2	169.0	105.3	1,991.0	-	-	4,287.4	180.1	4,467.5
(17)	17	15.4	96.4	24.8	129.1	131.6	59.9	61.1	162.2	14.2	32.7	16.9	17.3	42.9	389.3	13.8	39.0	801.7	169.9	105.7	2,071.5	-	-	4,395.4	184.6	4,580.0
(18)	18	15.5	96.9	25.0	129.8	132.3	60.3	61.4	163.2	14.3	32.9	17.0	17.4	43.6	391.5	13.9	39.2	806.2	170.8	106.9	2,083.3	-	-	4,421.4	185.7	4,607.1
(19)	19	15.3	97.0	25.1	130.4	132.1	60.6	61.7	161.2	14.2	32.1	17.1	17.0	43.2	354.3	13.4	39.5	810.8	171.9	107.1	1,885.6	-	-	4,189.6	176.0	4,365.6
(20)	20	15.6	98.0	25.3	131.3	133.6	60.9	62.1	165.0	14.4	33.2	17.2	17.6	44.1	396.0	14.1	39.7	815.4	172.8	107.7	2,107.1	-	-	4,471.1	187.8	4,658.9
(21)	21	15.6	98.4	25.4	132.0	134.0	61.3	61.9	165.0	14.5	33.1	17.3	17.5	44.1	385.0	14.0	39.9	820.0	173.7	108.7	2,048.9	-	-	4,410.3	185.3	4,595.6
(22)	22	15.8	99.1	25.6	132.7	134.9	61.6	62.8	166.9	14.6	33.6	17.4	17.8	44.6	400.4	14.2	40.1	824.6	174.8	115.1	2,132.1	-	-	4,528.7	190.2	4,718.9
(23)	23	15.8	99.5	25.7	133.5	135.4	62.0	63.1	166.8	14.6	33.5	17.4	17.7	44.6	389.4	14.1	40.4	829.3	175.8	113.5	2,073.2	-	-	4,465.3	187.6	4,652.9
(24)	24	23.8	97.2	25.8	133.8	128.5	62.3	62.9	154.2	14.3	31.3	17.6	16.0	41.9	304.1	14.6	41.9	833.9	182.3	114.6	55.7	-	-	2,356.7	99.0	2,455.7
(25)	25	16.1	100.8	26.0	135.0	137.0	62.7	63.9	169.7	14.9	34.2	17.6	18.1	45.3	407.3	14.5	40.8	838.7	177.8	114.8	2,169.7	-	-	4,604.9	193.4	4,798.3
(26)	26	16.1	101.2	26.1	135.7	137.4	63.0	64.2	169.7	14.9	34.0	17.7	18.0	45.4	396.0	14.4	41.1	843.4	178.8	115.4	2,109.5	-	-	4,542.0	190.8	4,732.8
(27)	27	16.3	101.9	26.3	136.6	138.4	63.4	64.6	171.6	15.0	34.6	17.8	18.3	45.8	411.9	14.7	41.3	848.2	179.7	115.9	2,194.8	-	-	4,657.1	195.6	4,852.7
(28)	Total	\$450.2	\$2,534.4	\$660.3	\$3,424.9	\$3,443.0	\$1,591.9	\$1,619.2	\$4,170.2	\$372.1	\$839.0	\$449.7	\$438.7	\$1,121.0	\$9,225.5	\$359.5	\$1,044.9	\$21,302.7	\$4,547.4	\$2,907.9	\$42,423.6	-	-	\$102,926.1	\$4,323.7	\$107,249.8

TABLE 9

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

DEMONSTRATION PLANT PHASE III OPERATING COSTS
BY COST CENTER ALLOWING 7% ESCALATION
\$000

TABLE 10

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

AMMONIA PLANT PHASE III OPERATING COSTS
BY COST CENTER ALLOWING 7% ESCALATION
\$000

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Line No.	Month of Phase III	Cost Center																								
		Docking Facility	Coal Handling	Slurry Preparation	Coal Gasification	Synthesis Gas Cleanup	Air Separation	Sulfur Recovery	Steam Generation	Raw Water	Cooling Water	Treated Water	Waste Treatment	Ash Disposal	Electricity	Railroad Service	General Plant	Maintenance	Plant Adminis	Grace Proj Mgmt	Coal	Ammonia Synthesis	Ammonia S&S	Subtotal	Grace G&A	Total
(1)	1	\$ 0.2	\$0.9	-	-	-	-	\$0.6	\$ 2.2	\$ 3.6	\$ 11.9	\$0.1	\$ 1.2	\$0.4	\$ 37.8	\$ 0.1	\$ 5.2	\$ 101.8	\$ 21.9	-	\$ 1.0	\$ 58.3	\$ 23.9	\$ 271.1	-	\$ 271.1
(2)	2	0.1	0.4	-	-	-	-	0.2	2.2	3.6	12.0	0.1	1.1	0.2	37.4	0.1	5.2	102.4	21.7	-	1.6	58.6	24.1	271.0	-	271.0
(3)	3	0.1	0.4	-	-	-	-	0.3	2.2	3.7	12.0	0.1	1.1	0.2	37.6	0.1	5.2	102.9	21.8	-	2.8	58.8	24.2	273.5	-	273.5
(4)	4	5.1	0.3	-	-	-	-	0.3	2.2	3.7	12.1	0.1	1.2	0.2	38.1	1.5	6.0	103.5	25.2	-	3.9	59.1	24.3	286.8	-	286.8
(5)	5	5.1	0.4	-	-	-	-	0.2	2.3	3.7	12.1	0.1	1.2	0.2	38.3	1.5	6.0	104.1	25.1	-	4.1	59.4	24.5	288.3	-	288.3
(6)	6	6.3	0.3	-	-	-	-	0.2	2.3	3.7	12.2	0.1	1.2	0.1	38.5	2.0	6.2	104.7	25.9	-	4.6	59.7	24.6	292.6	-	292.6
(7)	7	6.4	0.3	-	-	-	-	0.1	2.3	3.7	12.3	0.1	1.2	0.1	38.8	2.0	6.2	105.3	26.1	-	4.3	60.0	24.7	293.9	-	293.9
(8)	8	7.9	0.2	-	-	-	-	0.2	2.4	3.8	12.5	0.1	1.2	0.1	40.6	2.8	6.5	105.9	27.6	-	5.5	60.4	24.9	302.6	-	302.6
(9)	9	9.1	0.2	-	-	-	-	0.2	2.5	3.9	13.4	0.1	1.4	0.2	50.9	3.5	6.7	106.5	27.7	-	5.7	60.7	25.0	317.7	-	317.7
(10)	10	0.2	0.7	-	-	-	-	0.5	2.3	3.8	12.5	0.1	1.2	0.3	39.4	0.1	5.5	107.1	22.7	-	0.4	61.0	25.2	283.0	-	283.0
(11)	11	7.8	0.3	-	-	-	-	0.1	2.5	3.8	12.6	0.1	1.3	0.1	40.0	2.7	6.6	107.7	27.3	-	5.4	61.3	25.3	304.9	-	304.9
(12)	12	9.3	0.3	-	-	-	-	0.2	2.6	4.0	13.7	0.2	1.4	0.2	53.6	3.6	6.8	108.3	28.2	-	6.1	61.6	25.5	325.6	-	325.6
(13)	13	9.4	0.3	-	-	-	-	0.1	2.6	4.0	13.8	0.2	1.5	0.1	53.9	3.7	6.8	108.9	28.4	-	6.1	62.0	25.6	327.4	-	327.4
(14)	14	9.4	0.3	-	-	-	-	0.2	2.6	4.0	13.8	0.2	1.4	0.1	52.4	3.7	6.8	109.5	28.5	-	5.9	62.3	25.8	326.9	-	326.9
(15)	15	9.5	0.3	-	-	-	-	0.2	2.6	4.1	14.0	0.2	1.5	0.1	54.5	3.7	6.9	110.2	28.7	-	6.2	62.6	25.9	331.2	-	331.2
(16)	16	9.5	0.2	-	-	-	-	0.2	2.6	4.0	13.9	0.2	1.5	0.1	53.0	3.7	7.0	110.8	28.8	-	6.0	62.9	26.0	330.4	-	330.4
(17)	17	9.5	0.2	-	-	-	-	0.2	2.7	4.1	14.1	0.2	1.5	0.2	55.1	3.7	7.0	111.4	29.0	-	6.2	63.2	26.2	334.5	-	334.5
(18)	18	9.6	0.3	-	-	-	-	0.2	2.6	4.1	14.2	0.1	1.5	0.1	55.4	3.8	7.1	112.1	29.2	-	6.3	63.5	26.3	336.4	-	336.4
(19)	19	9.5	0.3	-	-	-	-	0.2	2.7	4.1	13.9	0.1	1.4	0.2	50.2	3.7	7.0	112.6	29.3	-	5.7	63.8	26.5	331.2	-	331.2
(20)	20	9.8	0.3	-	-	-	-	0.2	2.7	4.2	14.4	0.1	1.5	0.1	56.0	3.8	7.1	113.3	29.5	-	6.3	64.2	26.6	340.1	-	340.1
(21)	21	9.8	0.3	-	-	-	-	0.2	2.7	4.1	14.3	0.1	1.5	0.2	54.5	3.8	7.2	113.9	29.7	-	6.2	64.5	26.8	339.8	-	339.8
(22)	22	9.9	0.3	-	-	-	-	0.2	2.7	4.2	14.6	0.1	1.5	0.1	56.7	3.9	7.2	114.6	29.8	-	6.4	64.9	26.9	344.0	-	344.0
(23)	23	9.9	0.3	-	-	-	-	0.2	2.8	4.2	14.5	0.2	1.5	0.2	55.1	3.9	7.2	115.2	29.9	-	6.2	65.2	27.1	343.6	-	343.6
(24)	24	0.2	0.8	-	-	-	-	0.5	2.5	4.1	13.5	0.1	1.3	0.3	42.7	0.1	5.9	115.9	24.6	-	0.4	65.4	27.2	305.5	-	305.5
(25)	25	10.0	0.3	-	-	-	-	0.2	2.8	4.2	14.8	0.2	1.6	0.2	57.6	3.9	7.3	116.5	30.3	-	6.5	65.8	27.4	349.6	-	349.6
(26)	26	10.0	0.3	-	-	-	-	0.2	2.8	4.2	14.7	0.2	1.6	0.1	56.0	3.9	7.3	117.2	30.5	-	6.3	66.2	27.6	349.1	-	349.1
(27)	27	10.1	0.4	-	-	-	-	0.2	2.8	4.3	14.9	0.2	1.6	0.2	58.3	3.9	7.4	117.9	30.7	-	6.6	66.5	27.7	353.7	-	353.7
(28)	Total	\$193.7	\$9.6	-	-	-	-	\$6.3	\$68.2	\$106.9	\$362.7	\$3.7	\$37.1	\$4.6	\$1,302.4	\$73.2	\$177.3	\$2,960.2	\$738.1	-	\$132.7	\$1,681.9	\$695.8	\$8,554.4	-	\$8,554.4

TABLE 10

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

AMMONIA PLANT PHASE III OPERATING COSTS
BY COST CENTER ALLOWING 7% ESCALATION
\$000

Phase III Cost Sharing Detail

The operating costs for the Demonstration Plant are to be further subdivided in accordance with the cost-sharing provisions of the Prime Contract between Grace and DOE. Grace additionally bears the operating costs associated with the Ammonia Plant. Quantitative presentation of these costs are indicated in Table 11 on the following page.

As was the case with the operating cost estimate, it must again be noted that those costs as presented in Table 11 represent an annual seven percent escalation factor directed by DOE, and do not represent Grace's best estimate for the operating costs of the Integrated Facility.

(Table 11 follows)

TABLE 11

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

INTEGRATED FACILITY PHASE III COST SHARING DETAIL
BASED ON 7% ANNUAL ESCALATION
(\$000)

Line No.	Month of Phase III	(1)	(2)	(3)	(4)	(5)
		Phase III Operating Costs				
		Demonstration Plant	Ammonia Plant	Integrated Facility	DOE Share	Grace Share
(1)	1	\$ 2,207.6	\$ 271.1	\$ 2,478.7	\$ 1,103.8	\$ 1,374.9
(2)	2	2,461.4	271.0	2,732.4	1,230.7	1,501.7
(3)	3	2,736.4	273.5	3,009.9	1,368.2	1,641.7
(4)	4	3,159.1	286.8	3,445.9	1,579.6	1,866.3
(5)	5	3,204.7	288.3	3,493.0	1,602.4	1,890.6
(6)	6	3,738.8	292.6	4,031.4	1,869.4	2,162.0
(7)	7	3,656.7	293.9	3,950.6	1,828.3	2,122.3
(8)	8	4,092.1	302.6	4,394.7	2,046.0	2,348.7
(9)	9	4,272.4	317.7	4,590.1	2,136.2	2,453.9
(10)	10	2,266.1	283.0	2,549.1	1,133.1	1,416.0
(11)	11	4,089.1	304.9	4,394.0	2,044.5	2,349.5
(12)	12	4,452.7	325.6	4,778.3	2,226.4	2,551.9
(13)	13	4,480.0	327.4	4,807.4	2,240.0	2,567.4
(14)	14	4,417.2	326.9	4,744.1	2,208.5	2,535.6
(15)	15	4,529.5	331.2	4,860.7	2,264.8	2,595.9
(16)	16	4,467.5	330.4	4,797.9	2,233.8	2,564.1
(17)	17	4,580.0	334.5	4,914.5	2,290.0	2,624.5
(18)	18	4,607.1	336.4	4,943.5	2,303.5	2,640.0
(19)	19	4,365.6	331.2	4,696.8	2,182.8	2,514.0
(20)	20	4,658.9	340.1	4,999.0	2,329.5	2,669.5
(21)	21	4,595.6	339.8	4,935.4	2,297.8	2,637.6
(22)	22	4,718.9	344.0	5,062.9	2,359.4	2,703.5
(23)	23	4,652.9	343.6	4,996.5	2,326.5	2,670.0
(24)	24	2,455.7	305.5	2,761.2	1,227.9	1,533.3
(25)	25	4,798.3	349.6	5,147.9	2,399.1	2,748.8
(26)	26	4,732.8	349.1	5,081.9	2,366.4	2,715.5
(27)	27	4,852.7	353.7	5,206.4	2,426.3	2,780.1
(28)	Total	<u>\$107,249.8 (a)</u>	<u>\$8,554.4 (b)</u>	<u>\$115,804.2</u>	<u>\$53,624.9</u>	<u>\$62,179.3</u>

(a) See Table 9 for details by cost center.

(b) See Table 10 for details by cost center.

SECTION IV

ESCALATION CRITERIA

The entirety of this document has been predicated on a seven percent annual escalation rate for all categories of cost. Having established the base capital and operating estimates in first quarter 1979 dollars, the tables on the following pages indicate the escalation factors utilized in the development of the preceding Phases II and III Current Working Estimates. It should be noted that Phase II escalations are quarterly, while Phase III escalations are monthly.

(Tables 12 and 13 follow)

TABLE 12

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

PHASE II ESCALATION FACTORS
AT 7% ANNUAL RATE

<u>Line No.</u>	<u>Quarter of Phase II</u>	<u>Mid Point Date</u>	<u>Escalation Factor</u>
(1)	1	3/15/80	1.07605
(2)	2	6/15/80	1.09441
(3)	3	9/15/80	1.11308
(4)	4	12/15/80	1.13207
(5)	5	3/15/81	1.15138
(6)	6	6/15/81	1.17102
(7)	7	9/15/81	1.19100
(8)	8	12/15/81	1.21132
(9)	9	3/15/82	1.23198
(10)	10	6/15/82	1.25300
(11)	11	9/15/82	1.27437
(12)	12	12/15/82	1.29611
(13)	13	3/15/83	1.31822
(14)	14	6/15/83	1.34071

TABLE 13

AGRICULTURAL CHEMICALS GROUP
MINING & PRODUCTION OPERATIONS
SYNTHESIS GAS DEMONSTRATION PLANT PROGRAM

PHASE III ESCALATION FACTORS
AT 7% ANNUAL RATE

<u>Line No.</u>	<u>Month of Phase III</u>	<u>Mid Point Date</u>	<u>Escalation Factor</u>
(1)	1	8/15/83	1.35591
(2)	2	9/15/83	1.36358
(3)	3	10/15/83	1.37129
(4)	4	11/15/83	1.37904
(5)	5	12/15/83	1.38684
(6)	6	1/15/84	1.39468
(7)	7	2/15/84	1.40257
(8)	8	3/15/84	1.41050
(9)	9	4/15/84	1.41848
(10)	10	5/15/84	1.42650
(11)	11	6/15/84	1.43457
(12)	12	7/15/84	1.44268
(13)	13	8/15/84	1.45084
(14)	14	9/15/84	1.45904
(15)	15	10/15/84	1.46729
(16)	16	11/15/84	1.47559
(17)	17	12/15/84	1.48393
(18)	18	1/15/85	1.49232
(19)	19	2/15/85	1.50076
(20)	20	3/15/85	1.50925
(21)	21	4/15/85	1.51778
(22)	22	5/15/85	1.52636
(23)	23	6/15/85	1.53499
(24)	24	7/15/85	1.54367
(25)	25	8/15/85	1.55240
(26)	26	9/15/85	1.56118
(27)	27	10/15/85	1.57001