



# CATALYTIC, INC.

P. O. BOX 151, MIDDLETOWN, PENNSYLVANIA 17057

TMI-163

15 August 1978

Mr. John J. Barton  
G.P.U. Service Corporation  
P. O. Box 480  
Middletown, Penna. 17057

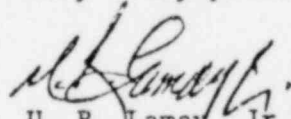
Subject: Catalytic, Inc. Contract No. 36590  
Supplemental Maintenance & New Construction Service  
Met. Ed. - TMI - Units 1 and 2  
CATALYTIC Final Cost Report thru 28 May 1978

Dear Mr. Barton:

In response to the request of Mr. C. J. O'Neill, we have revised the Final Cost Report for CATALYTIC expenditures at TMI - Unit #2 thru 28 May 1978. Attached is Revision "A" of the report originally submitted to your office by CATALYTIC letter #TMI-140 dated 20 June 1978.

If you have any further questions concerning this matter please do not hesitate to contact the originator of G. M. Huggins.

Very truly yours,

  
U. R. Lamay, Jr.  
Project Manager

URL/jw

cc: C. J. O'Neill

~~W. F. Guma~~ (Without Attachment)

R. W. Heward (Without Attachment)

E. J. Miller (Without Attachment)

File

8001160 585

CATALYTIC FINAL COST REPORT  
 Project No. 36592  
 TMI - Unit #2  
 Report Date May 28th., 1978

ITEM #1 FINAL COST REPORT SUMMARY - Rev. "A"

		<u>MANHOURS</u>	<u>COST</u>
Direct Labor	Straight Time	356,932	\$ 5,320,814
Indirect Labor	Straight Time	371,617	5,100,670
Premium Time		105,599	1,321,779
Subcontractor Support		32,900	465,939
Start-up Support		<u>87,402</u>	<u>1,353,048</u>
TOTAL LABOR		954,450	\$13,562,250
Subcontracts		---	997,808
Material		<u>---</u>	<u>2,337,896</u>
		954,450	\$16,897,954

ITEM #2 MAN-MONTHS AND MANHOURS BY CRAFT & SUPERVISION/STAFF

	<u>MANHOURS</u>	<u>MAN-MONTHS</u>
Craft Labor	848,851	4,993
Supervision & Staff	<u>152,887</u>	<u>899</u>
TOTAL	1,001,738	5,892

\* MAN-MONTH = 170 MANHOURS

CATALYTIC, INC. - FINAL COST REPORT  
 Three Mile Island - Unit #2  
 Project No. 36592  
 Report Date May 28th., 1978

ITEM 2

EXPENDED MANHOURS BY CRAFT - Rev. "A"

<u>CRAFT</u>	<u>CONSTRUCTION</u>	<u>MAINTENANCE</u>	<u>TOTALS</u>
Asbestos Workers	-0-	1,150	1,150
Boilermakers	393	24,420	24,813
Bricklayers	79	-0-	79
Carpenters	32,568	30,255	62,838
Cement Finishers	11,812	-0-	11,812
Electricians	111,550	142,772	254,322
Ironworkers	30,075	13,932	44,007
Laborers	40,935	68,636	109,571
Millwrights	-0-	37,213	37,213
Operating Engineers	8,913	1,345	10,258
Painters	-0-	96	96
Pipefitters	138,740	145,405	284,145
Teamsters	<u>1,474</u>	<u>7,088</u>	<u>8,562</u>
Total	376,539	472,312	848,851

CATALYTIC FINAL COST REPORT  
Project #36592  
TMI - Unit #2  
Report Date May 28th., 1978

Item #3 Direct Craft Worked Manhours Curve

Causes of major changes between weekly expenditures:

10/02/77	Reduction in forces	} CLIENT DIRECTED
10/09/77	Reduction in forces	
11/13/77	Holiday - Job closed for Veterans Day	
11/27/77	Holiday - Job closed for Thansgiving	
12/25/77	Holiday - Job closed for Christmas	
1/01/77	Shift extended to 10 hours and weekends	
2/05/78	Shift returned to 8 hours - no weekends	
2/12/78	Job closed due to inclement weather	
2/19/78	Worked weekend to make up lost time	

CATALYTIC FINAL COST REPORT  
Project No. 36592  
TMI - Unit #2  
Report Date May 28th., 1978

ITEM #4

DIRECT CRAFT MANHOURS BY MONTH AND CUMMULATIVE

	<u>MONTH</u>	<u>CURRENT</u>	<u>CUMMULATIVE</u>
1977	August	2,305	2,305
	September	39,845	42,150
	October	41,485	83,635
	November	62,417	146,052
	December	90,311	236,363
1978	January	81,800	318,163
	February	23,199	341,362
	March	7,299	348,661
	April	6,568	355,229
	May	1,703	356,932

CATALYTIC FINAL COST REPORT  
 Project # 36592  
 TMI - Unit #2  
 Report Date May 28th., 1978

ITEM #5

START UP CRAFT MANHOURS BY MONTH BY CRAFT:

	1977					1978					Total
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	
Boilermakers				284	259	66	12	74	47	16	758
Carpenters		106	252	309	89	187	75	80	42	16	1156
Electricians		3066	7198	5287	5105	5835	5589	3074	2709	1336	39289
Ironworkers				201	4	309	9				523
Laborers		18	10	93	46	51		29	10	10	267
Millwrights	62	997	1709	1491	1392	1640	1276	1505	1802	990	12564
O.E.'s		1	13	9	5	9					37
Pipefitters	181	4543	4343	2979	4243	5342	3307	3180	2944	1530	32592
Teamsters		64	34	38	17	12	16	1	9	25	216
<b>TOTALS</b>	<b>243</b>	<b>8795</b>	<b>13559</b>	<b>10691</b>	<b>11250</b>	<b>13451</b>	<b>10284</b>	<b>7943</b>	<b>7563</b>	<b>3623</b>	<b>87402</b>

CATALYTIC FINAL COST REPORT  
Project #36592  
TMI - Unit #2  
Report Date May 28th., 1978

Items #6 - 9 Subcontracts

Catalytic engaged only two subcontractors at TMI - Unit #2.  
These were service subcontracts with no reportable manhours.  
Dollar costs are recorded below:

Harry F. Ortlip	Original P.O.	\$ 100,000.00
	Supplements	<u>\$ 194,808.00</u>
	Total	\$ 294,808.00
J. P. Modesto	Original P.O.	\$ 50,000.00
	Supplements	<u>\$ 653,000.00</u>
	Total	\$ 703,000.00
Total Subcontract Costs		<u>\$ 997,808.00</u>

CATALYTIC FINAL COST REPORT  
 Project #36592  
 TMI - Unit #2  
 Report Date May 28th., 1978

Item 10 Final Unit Cost Report

These units include only those installed by the construction forces.  
 (See Attached Sheet)

TYPE OF UNIT	INSTALLED	TOTAL MHS.	TOTAL \$	MHS/UNIT	\$/UNIT
Conduit	27,555'	16,280	235,084	.59	8.53
Tray Covers	9,749'	20,892	305,514	2.14	31.34
Pull Ckts.	500 ea	13,125	188,934	26.25	377.87
Term Ckts	5,858 ea	7,900	114,279	1.35	19.51
Light Fixtures	584 ea	22,132	327,838	37.90	561.37
Heat Tracing	4,957'	7,250	103,507	1.46	20.88
Large Bore Welds	81 ea	1,734	26,178	21.41	323.19
Small Bore Welds	409 ea	3,258	48,369	7.97	118.26
Large Bore Piping	38,880 Lbs	3,896	55,656	.10	1.43
Small Bore Piping	1,100 L.F.	1,039	15,255	.94	13.87
Large Bore Hangers	697 ea	56,795	874,938	81.48	1,255.29
Small Bore Hangers	1,026 ea	26,026	417,184	26.11	406.61



Item 10 Final Unit Cost Report

Data for the preparation of the Unit Cost Breakdown of Installed Quantities was obtained from the following:

Units Installed were obtained from the Quantities Installed Report for January 25, 1978.

Manhours and dollars expended were obtained from the Field Labor Summary for January 29, 1978.

Below are listed the types of Units.

W.A.N.'s

ELECTRICAL

Conduit  
Tray Covers  
Circuit Pulls  
Circuit Terms  
Light Fixtures  
Heat Tracing

PIPING

Large Bore Welds  
Small Bore Welds  
Large Bore Pipe  
Small Bore Pipe  
Large Bore Hangers  
Small Bore Hangers

Concrete

Rebar (Ironworkers Only)

After January 29, 1978 the majority of work performed was maintenance and unit cost was not followed.

THREE MILE ISLAND UNIT #2

QUANTITIES INSTALLED

	Units	No. this week	total complete	Est. to complete	Total
VIL ...					
Forework	S.F.	566	11,436		
Resteel	Tons	133	141		
Cadwelds	Each	0	2		
Concrete	C.Y.	2	52		
ELECTRICAL ...					
Conduit	L.F.	652	2583	474	3057
Tray	L.F.	22	502	0	502
Cable Pulling					
1. Power	Each	4	62	48	110
2. Control/Instr.	Each	3	81	100	181
Cable Terminations					
1. Power	Each	0	484	415	899
2. Control/Instr.	Each	94	533	835	1368
Station Grounding	L.F.	0	200	1000	1200
Building Lighting	Each	29	255	68	323
Heat Tracing	L.F.	596	900	2701	3601
Penetrations - Elec.	Each	3	3	9	12
Circ. Turned over to Start-up	Each	0	274	1650	1824
PIPING ...					
2 1/2" & larger Erection	Lbs.	180	5678	30,322	36000
2 1/2" & larger Welding	Each	8	49	201	250
2 1/2" & larger control valves	Each	0	0	20	20
2 1/2" & larger motor oper. valve	Each	0	0	20	20
2 1/2" & larger other valves	Each	0	2	36	38
2 1/2" & larger perm. hanger erect.	Each	26	99	411	510
2 1/2" & larger seismic restraints	Each	6	25	117	142
2" & under Fabrication	L.F.	4	44	1956	2000
2" & Under Erection	L.F.	210	310	1690	2000
Penetrations	Each	0	0	34	34
2" Under Welds	Each				
INSTRUMENTATION					
Installation	Each	0			
Calibration	Each	0			
Tubing	L.F.	10	40	2660	2700

POOR ORIGINAL

## THREE MILE ISLAND UNIT #2

## QUANTITIES INSTALLED

	Units	No. this week	total complete	Est. to complete	Total
CIVIL ...					
Forework	S.F.	1400	14,481	3,600	18,081
Resteel	Tons	14	179	458	637
Cadwelds	Each	0	2	4	6
Concrete	C.Y.	0	91	803	894
ELECTRICAL ...					
Conduit	L.F.	2,239	10,479	1521	12,000
Tray	L.F.	12	16	504	520
Cable Pulling					
1. Power	Each	0	33	13	46
2. Control/Instr.	Each	11	454	220	674
Cable Terminations					
1. Power	Each	0	131	281	412
2. Control/Instr.	Each	323	2,559	3,699	6,258
Station Grounding	L.F.	0	200	1,000	1,200
Building Lighting	Each	42	376	114	490
Heat Tracing	L.F.	44	3,028	992	4,020
Penetrations - Elec.	Each	1	12	0	12
Circ. Turned over to Start-up	Each	0	274	1650	1,924
PIPING ...					
2 1/2" & larger Erection	Lbs.	0	38,880	0	38,880
2 1/2" & larger Welding	Each	5	40	37	77
2 1/2" & larger control valves	Each	0	0	20	20
2 1/2" & larger motor oper. valve	Each	0	0	1	1
2 1/2" & larger other valves	Each	0	0	4	4
2 1/2" & larger perm. hanger erect.	Each	3	52	73	125
2 1/2" & larger seismic restraints	Each	33	159	239	398
2" & under Welds	Each	1	56	269	325
2" & Under Erection	L.F.	40	357	743	1100
Penetrations	Each	32	65	23	88
2" & Under Perm. Hanger Erect.	Each	5	14	848	862
INSTRUMENTATION					
Installation UNISTRUT	Each	890	1,910		1910
Calibration	Each				
Tubing	L.F.	220	1405	6295	7700

POOR ORIGINAL

## THREE MILE ISLAND UNIT #2

## QUANTITIES INSTALLED

	Units	No. this week	total complete	Est. to complete	Total
CIVIL ...					
A. Formwork	S.F.	650	19581	539	20,120
B. Resteel	Tons	1	223	414	637
C. Cadwelds	Each	0	2	4	6
D. Concrete	C.Y.	8	429	465	894
ELECTRICAL ...					
A. Conduit	L.F.	992'	17360	7164	24,524
B. Tray cover	L.F.	180	855	5585	6,440
C. Cable Pulling					
1. Power	Each	3	48	8	56
2. Control/Instr.	Each	11	322	102	424
D. Cable Terminations					
1. Power	Each	3	188	34	222
2. Control/Instr.	Each	90	4006	1711	5717
E. Station Grounding	L.F.				
F. Building Lighting	Each	40	321	372	693
G. Heat Tracing	L.F.	173	3390	630	4020
H. Penetrations - Elec.	Each		12		12
I. Circ. Turned over to Start-up	Each	35	230	250	480
PIPING ...					
A. 2½" & larger Erection	Lbs.	0	38,880	0	38880
B. 2½" & larger Welding	Each	11	75	6	81
C. 2½" & larger control valves	Each	0	0	20	20
D. 2½" & larger motor oper. valve	Each	0	0	1	1
E. 2½" & larger other valves	Each	0	0	4	4
F. 2½" & larger perm. hanger	Each	67	429	263	692
G. _____	Each				
H. 2" & under Welds	Each	16	106	121	227
I. 2" & Under Erection	L.F.	0	357	743	1100
J. Penetrations	Each	0	87	0	87
K. 2" & under perm hang. erect	each	11	54	449	503
L. 2" & under perm hang. modif.	each	0	0	359	359
INSTRUMENTATION					
A. Installation Unistrut	Each	0	3500	0	3500
B. Calibration	Each	0	0	0	
C. Tubing	L.F.	610	5469	2231	7700



THREE MILE ISLAND UNIT #2

QUANTITIES INSTALLED

	Units	No. this week	total complete	Est. to complete	Total
<b>CIVIL ...</b>					
A. Formwork	S.F.	0	20181	2219	22400
B. Resteel	Tons	7	246	393	637
C. Cadwelds	Each	0	2	0	2
D. Concrete	C.Y.	0	431	69	500
<b>ELECTRICAL ...</b>					
A. Conduit	L.F.	634'	22,509	1,915	24,524
B. Tray	L.F.	719'	2,125	4,315	6,440
C. Cable Pulling					
1. Power	Each	0	48	0	56
2. Control/Instr.	Each	10	413	25	458
D. Cable Terminations - ENDS					
1. Power	Each	0	212	10	222
2. Control/Instr.	Each	28	4,504	1,219	5,723
E. Station Grounding	L.F.				
F. Building Lighting	Each	32	497	272	725
G. Heat Tracing	L.F.	300	4,286	16	4,302
H. Penetrations - Elec.	Each	0	12	0	12
I. Circ. Turned over to Start-up	Each	11	360	120	450
POOR ORIGINAL					
<b>PIPING ...</b>					
A. 2 1/2" & larger Erection	Lbs.	—	38,880	—	38,880
B. 2 1/2" & larger Welding	Each	—	31	—	31
C. 2 1/2" & larger control valves	Each	—	—	—	—
D. 2 1/2" & larger motor oper. valve	Each	—	—	—	—
E. 2 1/2" & larger other valves	Each	—	—	—	—
F. 2 1/2" & larger perm. hanger erect.	Each	6	589	111	700 (3 added)
G. 2 1/2" & larger seismic restraints	Each				
H. 2" & under Welds	Each	7	406	3	409
I. 2" & Under Erection	L.F.	5	1100	—	1100
J. Penetrations	Each	—	87	—	87
K. 2" UNDER HANGERS		114	466	610	1076
<b>INSTRUMENTATION</b>					
A. Installation	Each	—	3955	—	3955
B. Calibration	Each				
C. Tubing	L.F.	740'	5490	2410	11,900

## THREE MILE ISLAND UNIT #2

## QUANTITIES INSTALLED

	Units	No. this week	total complete	Est. to complete	Total
CIVIL ...					
A. Formwork	S.F.	200	20,381	300	20,681
B. Resteel	Tons	14	269	2	271
C. Cadwelds	Each	-	-	-	-
D. Concrete	C.Y.	18	452	48	500
ELECTRICAL ...					
A. Conduit	L.F.	760	27,555	1384	28,939
B. Tray	L.F.	776	9,749	396	10,145
C. Cable Pulling					
1. Power	Each	-	61	3	64
2. Control/Instr.	Each	9	439	28	467
D. Cable Terminations					
1. Power	Each	15	275	27	302
2. Control/Instr.	Each	277	5583	187	5770
E. Station Grounding	L.F.	-			
F. Building Lighting	Each	10	584	141	752
G. Heat Tracing	L.F.	286	4957	200	5157
H. Penetrations - Elec.	Each	0	12		12
I. Circ. Turned over to Start-up	Each	32	466	51	517
PIPING ...					
A. 2½" & larger Erection	Lbs.	0	38,880	0	38,880
B. 2½" & larger Welding	Each	0	81	0	81
C. 2½" & larger control valves	Each	0	0	0	0
D. 2½" & larger motor oper. valve	Each	0	0	0	0
E. 2½" & larger other valves	Each	0	0	0	0
F. 2½" & larger perm. hanger erect.	Each	22	697	3	700
G. 2½" & larger seismic restraints	Each	0	0	0	0
H. 2" & under Welds	Each	0	409	0	409
I. 2" & Under Erection	L.F.	0	1100	0	1100
J. Penetrations	Each	0	87	0	87
K. 2" & under hangers	Each	75	1026	50	1076
INSTRUMENTATION					
A. Installation	Each	0	3955	0	3955
B. Calibration	UNISTRUT Each				
C. Tubing	L.F.	0	10900	0	10,900