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RESERVE MINING COMPANY

MILEPOST 7 PROJECT

CONSTRUCTION STATUS

AND

PROGRESS ANALYSIS REPORT

PHASE II

REPORT II

(APRIL)

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v. 2



**Pullman Torkelson Co.**

A Subsidiary of Pullman Incorporated

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RESERVE MINING COMPANY

MILEPOST 7 PROJECT

CONSTRUCTION STATUS AND PROGRESS ANALYSIS REPORT

PHASE II REPORT II (APRIL)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>
I.	SUMMARY	1
II.	KAISER DESIGN ENGINEERING	3
III.	STATUS OF PROJECT PROCUREMENT PERFORMANCE	5
IV.	CONSTRUCTION STATUS	9
V.	SARGENT & LUNDY REPORT NO. 9	11
VI.	EXHIBITS	
	A. Kaiser Engineering Drawing Status Report	
	B. Design Progress Schedule	
	C. Design and Drawing Report	



I. SUMMARY

The review of the April Report indicates that the project is still within schedule with only a few items requiring special attention.

The Procurement Schedule and Status Report shows considerable improvement. Much effort has been expended to improve the reporting data. Comments are made on those items requiring review or action.

Design by Kaiser has improved in many areas based on last month; however, the structural discipline remains approximately 6% behind schedule and the heating and ventilating 14%. The electrical design continues a slow trend behind schedule while the instrumentation drawing load increased, creating a marked negative variance in performance.

The basis for evaluating the construction performance should be changed. The percent complete reported is based on the new weight factors assigned to the present scope of work. The early and late start envelope used for gaging schedule status is based on the old weight factors, resulting in a false schedule position. The dry cobbing area appears to be on schedule based on the old envelope, but is 18% behind schedule on the new envelope.

The Sargent & Lundy report shows some lag between the receipt of bids and the setting of dates for contract award for the mechanical equipment.

Electrical equipment usually requires long delivery schedules. Some of the required equipment should be closely monitored.



The only activity in design that should be checked is the relay and wiring drawing which was scheduled for completion March 1, 1978 and it is only 40% complete.



**II. KAISER DESIGN ENGINEERING**

Kaiser Engineer's Drawing Status Report (Exhibit A) indicates that engineering drawings are approximately 48% complete for the total drawing package. This is a net change of 4% from the previous report. The equivalent percent complete for the various disciplines is also listed on the Drawing Status Report. The Design and Drawing Report (Exhibit C) indicates a total of 1791 drawings are now required, an increase of 31 from the previous month, of which 707 (39.5%) have been issued.

The following is a comparison of the reported percent complete versus the scheduled percent complete by discipline.

<u>Discipline Dwgs.</u>	<u>Reported Eqv. % Complete</u>	<u>Scheduled % Complete</u>	<u>Difference</u>	<u>% Variance Based On Last Month (March)</u>
Structural	63.4	69	- 5.6	-0.7
Architectural	77.5	67	+10.5	+5.3
Mechanical	93.6	93	+ 0.6	+2.8
Civil	75.0	82	- 7.0	0
Piping	49.5	59	- 9.5	+0.4
H & V	47.9	62	-14.1	+1.1
Electrical	31.2	36	- 4.8	-3.2
Instrumentation	27.6	49	-21.4	-13.4

Only the Architectural and Mechanical disciplines are on or ahead of schedule. All other disciplines are still behind in varying degrees. The Instrumentation discipline continues to slip and has the greatest deviation from the planned percent completed. This was due in part to the increase in the number of drawings now required by this discipline. Thirty-one drawings were added, raising the total to 88 with only 24 completed, two more than the previous month.



The Design Progress Schedule (Exhibit B) indicates total design as 50.1% complete versus 53% scheduled, again calculated on a weighted manhour basis, where as the above analysis is calculated on the equivalent drawing basis.

Several disciplines show a significant deviation from their original schedule; i.e., Structural - 5.6% equal to approximately 3710 hours, Electrical - 4.8% approximately 10,078 hours and the Instrumentation - 21.4%, approximately 9800 hours. These areas should be continually monitored and improved upon particularly since the Structural, Electrical and Instrumentation disciplines have fallen further behind schedule since the March report.

Other disciplines remain about the same or have improved to some degree compared with last month's report, and do not appear to be a problem.



III. STATUS OF PROJECT PROCUREMENT PERFORMANCE

A. The information provided on the monthly PSSR has improved a great deal over the past several months. The effort expended to update this report, particularly the April report, is very evident.

There are, however, several areas that require some additional action. Comments related to these areas are as noted below.

1. Vendor Drawing Column

A forecast date should be provided on the PSSR as to when the vendor will provide his drawings for approval. If no drawings are to be provided it is recommended an N/A be shown on the PSSR.

2. Release for Fabrication Column

The date an item will be released for fabrication should also be forecastable and shown on the PSSR.

3. Ship Date Column

There are some line items that do not show a shipping date. This area has improved greatly over previous reports.

4. DIFF Column

Many line items that showed a negative float on previous PSSR's are showing a zero float on the April report. Nearly all of these changes to a zero float are due to the date the items are required on site having changed. It is understandable this may be a result of the CPM review that is

now underway for some of these line items. However, when so many line items change to exactly a zero float because of a change in the required on site date the reason should be checked.

B. The following comments pertain to specific line items and warrant a review.

1. The following line items appeared on the March PSSR but do not appear on the April report.

170-021AM  
290-032M  
290-033M  
290-304  
292-563  
293-019

2. Line Item 290-224

The March PSSR lists Pumps #224 through 227, 240, 241 and 260 under this line item. The April PSSR has no line item number 290-224 but a line item 290-240 under which only Pumps #240 and 241 are listed. Pumps #224 through 227 and #260 appear to have been omitted from the April PSSR.

3. Line Item 170-137A

The March PSSR showed computed P.O. award date of April 15, 1978. The April PSSR shows a P.O. award date of A 27 Dec 77. It is recommended information on the PSSR be updated as events occur.

4. The following line items indicate changes as to when they are required on site between the March and April PSSR.

<u>LINE ITEM</u>	<u>MARCH PSSR</u>	<u>APRIL PSSR</u>
171-032 AM	15 Apr 8	15 Nov 8
171-032 CM	15 Sep 8	15 Jan 9
171-032 DM	30 Sep 8	15 Jan 9

PTC is aware the CPM is undergoing a major review that may result in some major rescheduling; however, these changes seem excessive.

5. Line Item 171-205

The April PSSR shows a ship date of F 7 April 78 and a computer arrive date of 12 May 78. This indicates 35 days to travel to the job site from Milwaukee, Wisconsin. This seems excessive. In any event the vendor needs expediting as he missed the forecast shipping date of 7 April 78.

- C. The following chart compares the number of line items showing negative float for the February, March and April PSSR's.

DAYS OF NEGATIVE FLOAT												
Area	7-30 Days			31-90 Days			Over 90 Days			Total		
	Feb.	March	April	Feb.	March	April	Feb.	March	April	Feb.	March	April
161	2	2	15	11	12	13	4	10	1	17	24	29
170	3	10	6	3	6	6	4	7	5	10	23	17
171	1	9	5	4	11	6	5	6	0	10	26	11
240	0	3	1	2	5	1	0	1	1	2	9	3
290	4	7	5	9	6	4	7	2	2	20	15	11
291	4	3	1	4	5	3	3	2	3	11	10	7
292	2	1	1	1	3	1	0	0	1	3	4	3
293	0	4	0	2	1	1	10	4	1	12	9	2
<b>Total</b>	<b>16</b>	<b>39</b>	<b>34</b>	<b>36</b>	<b>49</b>	<b>35</b>	<b>33</b>	<b>32</b>	<b>14</b>	<b>85</b>	<b>120</b>	<b>83</b>

D. Until the receipt of the revised CPM, due the end of June, it is impossible to determine the accuracy or compare the effects the changes shown on the PSSR will have to the completion of the project. PTC has, therefore, attempted to point out areas on the PSSR that need improvement and will do an in-depth review of the PSSR upon receipt of the revised CPM.



IV. CONSTRUCTION STATUS

A. PTC agrees with the actual percentage complete as shown on the Milepost 7 Project sheet and with the percent complete shown for the individual areas on the other pages of the report. However, PTC does not agree with the concept of comparing the progress to the original envelope (early - late start graph) shown on the bar charts. The original envelope was plotted based on the weight factors at that time. These weight factors have changed as the scope of work has changed. As these weight factors change a new envelope must be plotted and the progress compared to this new envelope.

In plotting a new envelope with the new percent weight figures provided on the April 22, 1978 report the following comments are made.

1. Pelletizer Air Quality

In plotting a new envelope for this area the envelope changes very little. However, this area is 13.9% behind the original late start date which is also the same if the newly plotted envelope is used. The March 25, 1978 report showed this area to be only .2% behind schedule. Action should be taken to get this area back on the construction schedule.

2. Dry Cobbing

This area shows the need to compare the actual percent complete with the new envelope being plotted using the

new percent weight figures. Using the original envelope this area is only .2% behind the early start date. However, after plotting a new envelope using the new weight figures this area becomes 18% behind the late start schedule. Action is therefore required to get this area on construction schedule.



V. SARGENT & LUNDY REPORT NO. 9Mechanical Progress Report

Although bids for the baghouse, vertical service water pump, misc. cooling water pumps and the traveling screens were received last month, "Purchase Recommended" and "Contract Awarded" dates have still not been made. It is understood, however, "letters of recommendation" will be made during the "next period". This action should be monitored to ensure the necessary work is accomplished, without further delays. It should be noted that the mechanical dust collection layout drawings have not been started, because vendor baghouse drawings are not available.

Electrical Progress Report

It was noted that the misc. power and control cable and misc. materials were removed from the report. The following equipment still requires "spec released for bid" scheduled dates; 115 KV bus capacitor banks addition, units 1 and 2 demand control system and bulk power check metering system.

Proposals for the MPC transformer #2 and the 14.4 KV outdoor oil circuit breaker were received last month, but no purchase recommendations were made, therefore this action should be taken this month to avoid any possible delivery delays.

The proposal covering the 14. + KV switchgear modifications requires continual monitoring until the contract award has been made.

#### Electrical Drawing Release Schedule

PTC cannot evaluate the percentage complete since the number of drawings for each activity is not given, hence we can only accept the report as stated. It would appear, however, the physical and wiring drawings are on schedule, with the exception of the relaying the wiring drawing which is only 40% complete and should have been completed 3-1-78.

#### Mechanical Drawing Release Schedule

With the exception of the baghouse and associated work, all other activities appear to be proceeding well. However, as previously noted there are no schedule completion dates given to make comparisons against.



# RESERVE MILE POST 7 PROJECT

75083-001

## DRAWING STATUS

EXHIBIT A

DATE: 4/28/78

DISCIPLINE	TOTAL DWGS AS OF 7/1/77	CURRENT # OF DWGS	DWGS NOT STARTED	DWGS IN PROCESS	DWS ISSUED FOR APPROVAL	DWGS APPROVED FOR CONSTRUCTION	EQV DWGS COMP	EQV % COMP
STRUCTURAL	361	347	95	59	0	193	219.90	63.4
ARCHITECTURAL	44	56	11	10	2	33	43.40	77.5
MECHANICAL	142	139	1	43	4	91	130.10	93.6
CIVIL	49	48	8	6	2	32	36.00	75.0
PIPING	216	261	75	90	4	92	129.30	49.5
HEATING & VENTILATION	50	57	23	11	0	23	27.30	47.9
ELECTRICAL	575	796	514	74	63	145	248.20	31.2
INSTRUMENTATION	73	87	57	7	5	18	24.00	27.6
TOTAL	1,510	1,791	784	300	80	627	858.2	47.9
PREVIOUS REPORT TOTALS		1,760	811	353	117	479	773.4	43.9
NET CHANGE FROM PRIOR REPORT		31	(27)	(53)	(37)	148	84.8	4.0

REMARKS: Of the 31 drawings added this month, 24 were instrumentation.

## DESIGN PROGRESS SCHEDULE 75083-001 RESERVE MILEPOST 7 PROJECT

PERIOD ENDING: 30 APRIL 78

### EXHIBIT B

DISCIPLINE	1977												1978												1979							PERCENT COMPLETE
	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J				
STRUCTURAL <sup>2</sup>		2	5	10	15	21	28	36	44	51	58	67	69	77	81	91	94	96	97	98	99	100										
				8.7	14.7	10.7	29.8	37.4	43.1	50.6	53.6	56.1	63.4																			
ARCHITECTURAL <sup>2</sup>			3	7	15	24	33	42	51	4.3	5.3	6.0	6.7	7.4	8.1	8.8	9.2	9.6	100													
				11.0	12.5	22.7	30.4	40.5	48.7	56.6	60.1	65.2	77.5																			
MECHANICAL <sup>2</sup>		4	13	25	37	49	60	69	78	7.1	8.2	9.0	9.3	9.4	9.5	9.6	9.7	9.8	9.9	100												
				23.7	37.7	44.4	53.6	65.5	72.3	69.4	77.2	87.8	93.6																			
CIVIL <sup>2</sup>			8	16	24	32	40	48	56	5.9	6.6	7.5	8.7	8.9	9.4	9.8	100															
				9.8	22.8	25.5	39.4	46.4	50.8	55.1	59.7	68.0	75.0																			
PIPING <sup>2</sup>		1	3	6	10	15	21	27	33	3.8	4.5	5.2	5.9	6.5	7.1	7.7	8.3	8.8	9.3	9.6	9.7	9.8	9.9	100								
				2.4	6.1	8.8	14.3	20.7	27.6	30.3	35.2	42.1	49.5																			
HEATING & VENTILATING <sup>2</sup>		3	6	11	19	27	35	43	51	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0	9.7	100													
				3.2	9.4	14.5	20.0	27.8	32.9	36.1	37.8	42.9																				
ELECTRICAL <sup>2</sup>		1	2	4	7	11	16	21	27	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.0	9.4	9.8	9.9	100				
				2.8	3.8	7.8	11.0	17.5	21.8	19.7	23.7	29.4	31.2																			
INSTRUMENTATION <sup>2</sup>			1	3	6	11	17	23	32	3.1	3.7	4.3	4.9	5.5	6.1	6.7	7.2	7.7	8.2	8.6	9.0	9.3	9.6	9.8	100							
				6.5	6.3	13.8	18.8	19.8	27.8	30.8	31.8	35.0	37.4																			
SPECIFICATIONS <sup>3</sup>			4	8	13	21	30	39	48	4.8	5.1	5.4	5.7	6.1	6.4	6.7	7.0	7.4	7.7	8.0	8.3	8.7	9.0	9.3	9.6	100						
				9.4	14.7	19.5	26.6	33.6	38.1	50.5	51.5	63.1	68.8																			
MISC. SUPPORT <sup>3</sup>		4	10	14	18	23	26	30	34	3.3	3.3	3.3	3.1	5.5	5.9	6.3	6.7	7.1	7.5	7.9	8.3	8.7	9.1	9.4	9.6	9.8	100					
				10.9	13.8	19.4	24.7	27.3	33.6	40.8	41.6	50.5	54.0																			
SUPERVISION <sup>3</sup>		5	10	15	21	28	34	40	46	3.6	4.0	4.4	4.8	5.2	5.7	5.9	6.3	6.7	7.0	7.4	7.8	8.2	8.5	8.9	9.3	9.7	100					
				8.6	9.1	11.3	18.5	22.9	29.5	33.7	47.5	53.4	58.1																			
TOTAL DESIGN <sup>4</sup>		1	4	8	13	19	25	32	39	3.6	4.1	4.7	5.3	5.9	6.5	7.1	7.6	8.0	8.4	8.7	9.0	9.3	9.5	9.6	9.7	9.8	9.9	100				
				6.7	11.1	16.3	23.4	29.1	35.2	36.2	40.6	46.0	50.1																			
LEGEND:	SCHEDULED <sup>1</sup> .....																															
	ACTUAL _____																															
	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	26	27	28				
	1977												1978												1979							

100%  
80%  
60%  
40%  
20%  
0

NOTE 1. SCHEDULE BASED ON ESTIMATED MANMONTH EXPENDITURES.  
 NOTE 2. PERCENT COMPLETE IS CALCULATED ON AN EQUIVALENT DRAWING BASIS.  
 NOTE 3. PERCENT COMPLETE IS CALCULATED ON AN MANHOURS EXPENDED VERSUS TOTAL AT COMPLETION.  
 NOTE 4. PERCENT COMPLETE FOR TOTAL DESIGN IS CALCULATED ON A WEIGHTED MANHOUR BASIS

\*\* K A I S E R E N G I N E E R S \*\*

DESIGN & DRAWING REPORT  
 JOB TITLE RESERVE MINING PROJECT SILVER BAY MINN  
 JOB NO. 75083-001

SUMMARY

MAY 1, 1978

DEPARTMENT	2		SUMMARY		STRUCTURAL		ARCHITECT		MECHANICAL		CIVIL		PIPING		H + V		ELECTRICAL		INSTRUMENT	
	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD	TOTL	ISSD
AREA NO	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS	DWGS
15	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
22	9	9	3	3	0	0	23	20	24	12	5	3	19	13	4	2				
240	6	6	6	6	0	0	0	0	0	0	7	7	11	11	0	0				
161	132	89	19	13	88	57	1	1	29	9	11	6	103	39	15	6				
170	79	26	6	5	34	21	0	0	146	37	5	4	425	79	42	10				
171	56	55	6	6	17	17	1	1	28	28	3	3	79	41	5	2				
290	44	8	4	2	0	0	2	2	21	9	5	0	95	15	13	3				
291	16	0	6	0	0	0	11	7	13	1	6	0	51	10	7	0				
292	0	0	1	0	0	0	6	0	0	0	3	0	2	0	1	0				
293	5	0	5	0	0	0	2	1	0	0	12	0	11	0	0	0				
<b>TOTALS</b>	<b>347</b>	<b>193</b>	<b>56</b>	<b>35</b>	<b>139</b>	<b>95</b>	<b>48</b>	<b>34</b>	<b>261</b>	<b>96</b>	<b>57</b>	<b>23</b>	<b>796</b>	<b>208</b>	<b>87</b>	<b>23</b>				

GRAND TOTALS  
 TOTAL DRAWINGS 1791  
 TOTAL ISSUED 707