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RESERVE MINING COMPANY

MILEPOST 7 PROJECT

CONSTRUCTION STATUS

AND

PROGRESS ANALYSIS REPORT

PHASE II REPORT III

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Pullman Torkelson Co. A Subsidiary of Pullman Incorporated

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Pullman Torkelson Co.

### MILEPOST 7 PROJECT

### CONSTRUCTION STATUS AND PROGRESS ANALYSIS REPORT

#### PHASE II REPORT III

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STATE OF MINNESOTA



SUMMARY

Ι.

# A quarterly jobsite inspection was made of the construction at the Silver Bay site of the Reserve Mining Company on June 20 and 21. This report will cover this inspection tour as well as a review of the May Progress Reports furnished by Reserve.

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The inspection tour was conducted by Mr. Clarence Nohlechek, Reserve Construction Manager, and Larry Molinaro, Assistant Construction Manager. Pullman Torkelson Co. was representated by William Dalebout, John Stegmeier and George Gierloff.

The construction progress, work conditions and problem areas were discussed. Full cooperation and assistance were received in making the inspection which included not only those areas being monitored by Pullman Torkelson Co. but the basin project where the tailings and diversion dams are being built. There was a high level of activity in all areas.

The facilities covered in this report are the following:

- 1. Dry Cobbing
- 2. Coarse Tailings Handling and Loadout
- 3. Concentrator Modifications
- 4. Tailings Clarifiers
- 5. Pelletizer Air Quality
- 6. Tailings Clarifiers
- 7. Tailings Pipeline and Access Road

Each of these facilities is discussed separately in Section IV of this report. Five of these areas appear to be on schedule or can be brought up to schedule based on their present work plans. The Dry Cobbing and Pelletizer Air

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Quality are considerably behind schedule and even though efforts are being made to improve the schedule the present forecast is that they cannot be completed on time. The scheduled completion for the Pelletizer Air Quality Facilities is October 1, 1978, the projected completion is now six weeks later, November 15, 1978. Reserve is taking measures including increased working shifts and changes in equipment usage to improve the performance, but the six week delay may be impossible to make up. The Dry Cobbing area is 21.6% behind the late start day in the May Report. Although a second shift has been added it is doubtful that this facility can be completed on schedule.

The comments made by Pullman Torkelson Co. in their Phase II Reports were discussed briefly and it was concluded that it would be necessary to schedule another visit with Kaiser Engineering in Oakland to clarify some of the questions on the PSSR and engineering schedules. This will be done early in July in that the PSSR will then be updated in relation to the new CPM which will be completed June 30.

Many of our comments in this report are similar to Phase II Report II because many of the same conditions existed and the same baseline against which to measure was the same. The June Report will be measured against the new CPM with reports updated to match that schedule.

Relative to the Sargent & Lundy Reports we request that their reporting procedure be changed to enable us to check their progress. At present we have only their stated performance and are unable to tell whether they are ahead or behind schedule.

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#### II. KAISER DESIGN ENGINEERING

Kaiser Engineer's Drawing Status Report (Exhibit A) indicates that engineering drawings are approximately 54.5% complete for the total drawings package. This is a net change of 6.6% 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 1,793 drawings are now required, an increase of 2 from the previous month, of which 854 (42.6%) have been issued for construction.

Discipline Dwgs.	Reported Eqv. % Complete	Scheduled <u>% Complete</u>	Difference	% Variance Based on Last Month (April)
Structural	71.2	77	- 5.8	- 0.2
Architectural	81.2	74	+ 7.2	- 1.9
Mechanical	95.5	94	+ 1.5	+ .9
Civil	81.7	89	- 7.3	3
Piping	60.0	65	- 5.0	+ 4.5
H & V	54.2	69	- 14.8	7
Electrical	36.1	41	- 4.9	1
Instrumentation	36.5	55	- 18.5	+ 2.9

Only the Architectural and Mechanical disciplines are on or ahead of schedule. All other disciplines are still behind in varying degrees. The Instrumentation and Piping departments have improved their deviations from the schedule in the past month although they are both still behind by 18.5% and 5% respectively. It should be noted though that the positive variance in the Instrumentation department was largely due to a decrease in the drawings required (88 to 77) and not just in the number of drawings issued (24 to 28).



The Design Progress Schedule (Exhibit B) indicates total design as 58.9% complete versus 59% scheduled, again calculated on a weighted manhour basis, where as the above analysis is calculated on the equivalent drawing basis which indicates that the originally scheduled manhours will have to be exceeded to complete the work.

Several disciplines show a significant deviation from their original schedule; i.e., Structural - 5.8% equal to approximately 3,843 hours, Electrical - 4.9% approximately 10,288 hours and the Instrumentation - 18.5%, approximately 8,472 hours.

The Structural, Piping, and Electrical drawings comprise 1,413 of the 1,793 drawings required or 78.8%. These diciplines are behind schedule by 5.8%, 5.0% and 4.9% respectively which indicates that even though the project is only .1% behind by manhours it is likely 5% or more behind by equivalent drawings complete. The project could be tracked more effectively if the number of equivalent drawings complete was used as the basis for scheduling.

In general some improvement has been made from April although the disciplines noted should still be continually monitored and improved upon if the project is to be completed on schedule and budget.

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#### III. STATUS OF PROJECT PROCUREMENT PERFORMANCE

Α.

The following comments pertaining to the PSSR are made with PTC knowledge that the CPM is undergoing a major revision and some of these comments may not be accurate due to this revision. A meeting has been scheduled with Kaiser Engineering on July 12 to review the PSSR with the current CPM. This should clarify many of the discrepancies and repetitive comments that have been reported. PTC realizes there are different approaches to, and reasons for, reporting items in different ways.

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The following comments are directed to areas that PTC feels warrant some correction or review. Each line item has not been addressed individually but the same comment may pertain to one or more line items.

#### 1. Description and Quantity Column

Line Item 161-001 AA: The April Report indicates "project requesting reschedule of shipment" and indicates a ship date of F 26 May 8. The May Report makes the same statement requesting rescheduling but indicates a ship date of F 1 Aug 8. This would indicate one of two things. The ship date has been changed as per Project's request and the statement was not removed from the PSSR, or Projects are requesting a later ship date than 1 Aug 8 to reduce the onsite storage time. If the latter is the case PTC feels

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receipt of the item 21 days in advance of its required-at-site is not in excess and in fact provides a cushion to cover delays by the vendor, shipping delays, or possible repair or replacement if the item is damaged in shipment. Line items with similar irregularities are 161-001 C and 161-001 E.

#### 2. Specification Approval Column

Line Item 161-317 BL, 161-004 A through 161-004 P and 161-317 AL: Specification Approval Date on last month's report not met. Line Item 170-145 A shows no action and the item is required on site 1 Oct 78.

#### 3. <u>Requisition Date Column</u>

Line Item 161-337 AM and 161-377: No date is shown for this event. Other line items provide this date and PTC feels either a computer date, a forecast or an actual date should be shown. This would help to pinpoint where a delay is occurring in the required chain of events.

4. Bid Receipt and Recommendation for Purchase Column

Line Item 171-318: There is no date shown for either of these events. If either computer, forecast or actual date were shown it could be determined if a delay is occurring at this point. The April Report had computer dates for these events. The May Report shows the P.O. awarded; therefore, the actual dates for the bid receipt and recommendation for purchase should be available. Line Item 161-230 should show forecast dates.

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Line Item 290-021: This is a good example of where dates are provided and it is readily evident there has been a delay at this point for this line item. The April Report indicated a forecast date for the bid receipt date and a computer date for the recommendation for purchase, neither of which were met when compared to the May Report.

#### 5. P.O. Award Column

The P.O.'s are being awarded; however, some have been delayed due to events preceding them not taking place as projected.

#### 6. Vendor Drawings 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.

#### 7. Release for Fabrication Column

A date is provided in some cases while not in others. A forecast or actual date should be shown for all line items.

#### 8. Ship Date Column

There are still line items that do not show any ship date.

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

	DAYS OF NEGATIVE FLOAT														
	7-	30 D	ays	31-	90 I	Days	Ove	er 90	Days	Total					
Area	March	April	May	March	April	May	March	April	May	March	April	May			
161	2	15	17	12	13	13	10	1	0	24	29	30			
170	10	6	9	6	6	4	7	5	4	23	17	17			
171	9	5	7	11	6	5	6	0	0	26	11	12			
240	3	1	0	• 5	1	5	1	1	1	9	3	6			
290	7	5	9	6	4	22	2	2	4	15	11	35			
291	3	1	1	5	3	2	2	3	1	10	7	4			
292	1	1	0	3	1	0	0	1	3	4	3	3			
293	4	0	1	1	1	0	4	1	2	9	2	3			
Total	39	34	44	49	35	51	32	14	15	<b>1</b> 20	83	110			

С.

Β.

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.

SECTION-4



#### IV. CONSTRUCTION STATUS

Α.

On June 20 and 21, 1978, PTC personnel were on the construction site for the purpose of construction progress evaluation. Some of the comments in this report are based on information gathered during this visit and do not appear in the May Reports supplied to PTC by Reserve Mining.

Reserve Mining agreed that a new envelope must be plotted on the Facility Summary Schedule and Physical Progress Reports whenever a significant change occurs in the percent weight factor column. The June Report is to reflect this change.

#### B. General

Based on the following completion table the overall construction progress has generally decreased. This is occurring at the time of year when good weather would tend to lead to a sharp increase in progress. Several individual facilities are well behind their late start schedules while others are very close to falling behind based on the original CPM and Facility Summary Schedule. The present trend will be difficult but not impossible to reverse. The problem is recognized by Reserve and efforts are being taken now to improve construction progress.

С.

The following table shows the actual percent complete for each facility and the percent complete using the late start date as the base.

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Area	Scheduled Percent Completion Based on Early Start Date	Actual Percent Completion	Scheduled Percent Completion Based on Late Start Date	Completion Status Relative to Late Start Date
Milepost 7 Project (Total)	23.4	14.9 (15.3)	9.9	+ 5.0
161 - Dry Cobbing	39.3	*14.7 (15.6)	36.3	- 21.6
161 – Coarse Tailings Handling & Loadout	35.1	12.1 (12.1)	0.0	+ 12.1
170 – Concentrator Modifications	9.1	2.0 (0.7)	.8	+ 1.2
171 – Concentrate Filtering	27.2	16.1 (15.9)	11.4	+ 4.7
181 - Pelletizer Air Quality	70.0	*41.0 (41.0)	59.4	- 18.4
290 - Tailings Clarifiers	6.8	3.4 (3.4)	0.0	+ 3.4
291 – Tailings Pipline and Road- grade	100.0	* 6.0 (6.0)	29.0	- 23.0
292 – Tailings Dams and Diversions	22.3	15.3 (15.3)	**	- 7.0
240 - Silver Bay Truck Repair Shop	88.2	58.3 (58.3)	57.5	+ .8

Note:

- \* Areas behind Late Start Date Schedule
- \*\* No Late Start Date Reported

() Figures in parenthesis are percents complete as reported by Reserve Mining; all other figures are PTC calculations based on the Facility Summary Schedule and Physical Progress Report.

#### D. Milepost 7 Project

Reserve Mining reports an actual completion of 15.3 percent which PTC closely correlates with an actual percent completion of 14.9 percent based on the information provided on the Facility Summary Schedule and Physical Progress Report. PTC calculates the project to be 5 percent ahead of the late start scheduled; however it should be noted that the Milepost 7 Project includes many facilities other than those shown in the table and the 5 percent favorable completion status is not accurate for the facilities shown. An average of these completion percentages would be unfavorable.

Reserve Mining is having problems with absenteeism on the construction crews. This is a difficult problem for Reserve Mining to control; however, attempts are being made to reduce the problem. A brief description of each facility follows.

#### E. Dry Cobbing

As of this report the Dry Cobbing facility area is 21.6 percent behind the late start date. This is an increased slippage of 3.6 percent over last month. This amount of slippage in all probability cannot be made up. To decrease this large deficit as much as possible Reserve Mining is now working two shifts in this area. A double shift is not a cure-all as there is some loss of efficiency. Construction crew absenteeism, weather and unforeseen problems, etc., preclude this facility from being completed on schedule in the opinion of PTC.



#### F. Coarse Tails Handling and Loadout

This area appears to be 12.1 percent ahead of the late start date.

#### G. <u>Concentrate Filtering</u>

This area appears to be 4.7 percent ahead of the late start date. Reserve Mining reports 15.9 percent complete; however, PTC calculates completion to be 16.1 percent based on the information on the Facility Summary Schedule and Physical Progress Report.

#### H. Pelletizer Air Quality

Based on the May Report PTC calculates this facility to be 18.4 percent behind the late start date. This is an increase slippage of 5.3 percent over last month. PTC concurs with Reserve Mining's reported 41 percent complete for this facility.

Reserve Mining is looking into various ways whereby the 18.4 percent deficit can be overcome. It is PTC's opinion that this facility will not be completed on schedule.

#### I. Concentrator Modifications

Reserve Mining reports 0.7 percent complete while PTC calculates 2.0 percent complete based on the information on the Facility Summary Schedule and Physical Progress Report. Utilizing PTC calculations this indicates this facility to be 1.2 percent ahead of the late start date. This is not a very large margin and indicates requirements for close supervision to ensure this facility does not fall behind schedule.

#### J. Silver Bay Truck Repair Shop

This facility is not on the critical path. PTC concurs with Reserve Mining's reported 58.3 percent complete. PTC calculates this facility to be only 0.8 percent ahead of the late start date. If this facility is to be used for inside storage of incoming supplies, as is PTC's understanding, this facility requires close supervision.

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#### K. Tailings Clarifiers

PTC agrees with Reserve Mining's reported 3.4 percent complete which is ahead of the late start date.

#### L. Tailings Pipeline and Roadgrade

PTC concurs with Reserve Mining's reported 6.0 percent complete; however, this puts the facility 23 percent behind the late start date. The piping is arriving on site and providing the required construction trade crews are available this facility can be completed on schedule.





#### V. SARGENT & LUNDY REPORT NO. 10

#### Electrical Drawing Release Schedule

The physical and wiring diagrams are on schedule with the exception of a possible slip of the synchronizing diagram which is only 5% complete and should be complete by 6/19/78. As previously stated, we have no way of measuring the performance of Sargent & Lundy. The number of drawings required and the equivalent drawings complete have not been reported, nor can a check be made against scheduled completion based on the information supplied.

#### Mechanical Drawing Release Schedule

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



# RESERVE MILE POST 7 PROJECT

75083-001 EXHIBIT A

DRAWING STATUS

PERIOD ENDING

5/31/78

						2		
	TOTAL DWGS AS OF	CURRENT # OF DWGS	DWGS NOT STARTED	DWGS IN PROGESS	DWS ISSUED FOR	DWGS APPROVED	EQV DWGS COMP	EQV % COMP
DISCIPLINE	//1///		· ·		minovic	CONSTRUCTION		
STRUCTURAL	361	354	73	53	0	· 228	252.1	71.2
ARCHITECTURAL ,	Հեր	58	10	6	2	40	47.1	81.2
MECHANICAL	142	141	0	25	1	115	134,7	95.5
CIVIL	49	47	7	3	0	37	38.4	81.7
PIPING	216	263	58	88	4	113	157.8	60.0
HEATING & VENTILATION	50	57	19	14	0.	24	30.9	54.2
ELECTRICAL .	575	796	480	54	19	243	287.6	36.1
INSTRUMENTATION	73	77	46	3	14	24	28.1	36.5
TOTAL	1,510	1,793	693	246	30	824	976.7	54.5
PREVIOUS REPORT TOTALS		1,791	784	300	80	627	858.2	47.9
NET CHANGE FROM PRIOR REPORT		2	(91)	(54)	(50)	197	118.5	6.6
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REMARKS:

PERIOD ENDING: 31 N

# DESIGN PROGRESS SCHEDULE 75083-001 RESERVE MILEPOST 7 PROJECT

EXHIBIT B

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DISCIPLINE		1977							1978					1978						1979						PER			
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STRUCTURAL			5	.70 8.7		<u>?/</u> 207	28 29.8	<u>36</u> 37.4	. <u>44</u> 43.1	-1.7. 50.6	53.6 53.6	61 56.1	69 63.4	7.7 67.1	.81	.?.7	94-	94.	.9.7.	.9.8.	22.	100							•
ARCHITECTURAL				4	15 12.5	24 22.7	33 30.4	42 41.5	51	45 56.6	53	60	67 77.5	74. 755	81.	88	92	98	100										
MECHANICAL			./3.	25	37	49 44.4	60 53.6	<u>69</u> 655	78 723	71	82. 77.7	90 87.8	93.6	94- 93,4	95	96	.9.7	98	.99	100									
CIVIL				16	24	32	40	48.	56 50 f	59 55 I	66	75	87.	E.9. 83.5	96	.98.	100				· ·								-100%
PIPING			.3.	6	.10	15 8.8	21	27	33.	30 303	45	52.	59 49.5	65	.7.1	.7.7.	23	eð	.93.	96	97	वृत्र	1-92	100					1000
HEATING & VENTILATING				11	.12	.2'1.	35	43	51.	<u>41</u> 36.1	48	55 39.8	62	69	76	83	90	97.	100					<b> </b>	1				-80% .
ELECTRICAL			2	14	7	.//	14.0	21	27.	21 19.7	26	31	36	41	46	51	56	61	66	71	76	BI	86	90	24.	.98.	99.	<u>Too</u>	
INSTRUMENTATION			/		6	11	17	24 19.8	32	31	37 749	43	49	4.5 12.5	61	67	72	77.	82	86	90	23	96	<u>9</u> 9	120				-60%
SPECIFICATIONS				8	12	21	3Q.	39.	YB.	48 503	51	54	68.8	61 14.7	64	.67	70	.7.4.	.7.7	80	83	<u>97</u> .	90	93	96	100			-40%
MISC. SUPPORT			.19.		18	22 19.4	26	30 19-1-	2.1	-35. 409	<del>3</del> 3 44.0	4.7.	54.0	55.2 59.2	59	.63.	<u>67</u>	71.	.7.5	.7.9.	.83.	<u>इ.</u>		.94	96.	.2P.	100		-
SUPERVISION				75	20	24	28.5	32	36. 29.5	36 397	40	4:4 53.4	58.I	.52. 63,1	55	59.	63	<u>67</u>	. <u>70.</u>	.7.4:.	.78.	ēZ.	85	QA	93	97	100		-20%
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\* MOTE: PERCENT COMPLETE 15. BASED ON MANHOURS EXPENDED VERSUS FORECASTED TOTAL AT COMPLETION. PRIOR TO MAY 12 78, PERCENT COMPLETE WAS ON AN EQUIVALENT DRAWING BASIS.

#### \*\* KAISEP ENGINEERS \*\*

#### DESIGN & DRAWING REPORT JOP TITLE RESERVE MINING PROJECT SILVER BAY MINN

DEPARTM	ENT 2		SUM	MARY			JOB NO.7	5083-0	001		SUMMA	RY		JUNE	1 • 1978	3	
AREA	STRUC TOTI DWGS	TURAL ISSD DWGS	APCH TOTL DWGS	ITECT ISSD DWGS	MECHA TOTL DWGS	NICAL ISSD DWGS	CI TOTL DWGS	VIL ISSD DWGS	PIP TOTL DWGS	ING ISSD DWGS	H Totl Dwgs	◆ V ISSD DWGS	ELECT TOTL DWGS	RICAL ISSD DWGS	INSTRU TOTL DWGS	JMENT ISSD DWGS	
15	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	
22	10	9	4	4	0	0	21	21	24	13	5	, 3	19	13	5	2	
240	6	6	6	6	0	0.	0	0	0	0	7	7	11	11	0	0	
161	131	102	19	13	89	70	1	1	29	11	11	6	103	43	12	6	
170	84	42	6	6	35	29	0	0	148	55	5	5	425	114	38	15	
171	58	57	6	6	17	17	1	1	28	28	3	3	79	50	4	2	
290	44	12	Ş	2	0	0	3	2	21	9	5	0	95	18	12	3	
291	16	0	6	0	0	0	11	9	13	1	6	0	51	13	6	0	
292	0	0	1	n	0	0	6	0	0	0	3	0	2	0	0	0	
293	5	0	5	5	U	0	2	1	0	0	12	0	11	0	0	0	
TOTALS	354	229	58	42	141	115	47	37	263	117	57	24	796	262	77	28	

GRAND TOTALS TOTAL DRAWINGS 1793 TOTAL ISSUED 854

