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December 9, 1954

WASTE TANK SCHEDULING FOR B AND T PLANTS

By:

D. E. Peterson

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TO: T. Prudick
FROM: D. E. Peterson

WASTE TANK SCHEDULING FOR B AND T PLANTS

Introduction

Prior to fiscal year 1955 waste tank scheduling for Separations Plants included the Assumptions that T Plant would cease operations in March, 1955 and B Plant would not be reactivated. At the beginning of the fiscal year these were changed to the assumptions that T Plant would operate through June, 1958 and B Plant, after reactivation, would operate July, 1955 through June, 1957. It has been necessary to alter waste tank scheduling accordingly. Our letter of July 23, 1954, "B Plant Waste Storage Forecast", outlined the plan for the disposal of wastes from B Plant on the assumption that direct feed of metal waste from B Plant to the TBP Plant would not be done. On July 30, 1954 this letter was reissued as "Waste Storage for B Plant Reactivation", with a revision including more details and a provision for the direct feed of metal waste. On August 6, 1954 our letter "T Plant First Cycle Waste" was issued recommending that scavenging of T Plant first cycle waste be started by December 1, 1954. On October 22, 1954 our letter entitled "Justification for T Plant First Cycle Waste Scavenging" gave the detailed economic justification.

The present letter summarizes the preceding ones, includes minor modifications which further study and experience have brought to light, and also includes the other two waste streams from T Plant; which to-date appear to require no additional expenditures. This letter is based on the important assumption that 12 months aging of uranium is required between pile discharge and processing in the TBP Plant.

Summary and Conclusions

Due to the 4X program there will be storage space shortages for T and B Plants unless several volume reduction plans are put into effect.

The shortage for B Plant would be approximately 10 million gallons. The shortage for T Plant would be approximately 13 million gallons.

Therefore, it is recommended that the following plans be placed into operation to alleviate the approaching storage tank shortage:

- (1) Modify existing facilities at the 241-C Tank Farm for performing scavenging of stored TBP waste in East Area. The actual scavenging should be initiated by March, 1955. Our letters of July 23rd and 30th recommended February 1, 1955, but further study indicates that this relaxation can safely be made.
- (2) Modify the West Area Evaporator Facility for performing scavenging of stored TBP wastes in West Area. Actual scavenging should begin by March, 1956.
- (3) Continue in plant scavenging of T Plant first cycle waste. Crib facilities should be available by February, 1955.
- (4) Perform in plant scavenging of B Plant first cycle waste when production resumes.

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Summary and Conclusions (Continued)

If the foregoing volume reduction plans are not placed into operation, it will be necessary to construct additional storage tanks due to the 4X program.

DiscussionB PlantSecond Cycle and 224 Wastes

It is anticipated that storage space in tanks 110, 111 and 112-B can be regained for second cycle and 224 wastes by pumping TBP evaporator bottoms from tanks 110 and 111-B to tanks 108 and 109-B. The storage space to be regained in the 110-B cascade should provide sufficient storage for second cycle and 224 wastes for a 24 month operating period.

Metal Waste

When the present metal removal program is completed in East Area (estimated as April or May, 1955) there will be 8,258,000 gallons available for additional metal waste. The following tanks will be available:

<u>BX Farm</u>			<u>BY Farm</u>		
101	104	} 3,180,000 gals.	101	104	} 4,548,000 gals.
102	105		102	111	
103	106		103	112	
<u>C Farm</u>					
104) 530,000 gals.					

The chart number (x) in the Appendix indicates these tanks will not be adequate for operating B Plant for 24 months at 150 tons of uranium per month:

Basis for Chart Number (x)

- (1) B Plant operates July, 1955 through June, 1957 at 150 tons of uranium per month.
- (2) The volume of metal waste will be 4,200 gallons per ton of uranium.
- (3) The TBP Plant will not be able to process metal waste unless the aging is 12 months, or greater, from pile discharge. By routing metal waste to the 104-BY tank when B Plant resumes production, removal to the 221-U Building can be initiated on approximately May 6, 1956.
- (4) Removal rates to the TBP Plant will be 120 tons per month, when aged feed is available.

From chart (x) it is apparent that more space is needed for metal waste by October, 1956. It is considered necessary to recover storage space in tanks 101, 102, 103, 105 and 106-C for metal waste. At the present time these tanks contain TBP waste.

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Discussion (Continued)

B Plant (Continued)

Metal Waste (Continued)

These tanks could be recovered by modifying facilities in the 241-C Farm for in-farm scavenging. Chart number (j) in the Appendix indicates that these additional tanks will be needed for 24 month B Plant operation. Chart number (j) was developed with the same basis as chart number (x).

First Cycle Waste

Chart number (j) indicates that all the tanks in East Area with removal facilities, except 101, 102 and 103-B, will be needed for metal waste storage. Tanks 101, 102 and 103-B contain TBP evaporator bottoms; it appears that most of the storage space in these tanks could be recovered by scavenging if needed at a later date. However, in this study they are not utilized for other wastes.

The remaining tanks in East Area which could be used for first cycle and coating wastes are as follows:

C FARM		B FARM			BX FARM	
107	110	101	104	107	107	110
108	111	102	105	108	108	111
109	112	103	106	109	109	112

These tanks have a total capacity of 11,130,000 gallons; they have 10,653,000 gallons in storage consisting of various types sludge, evaporator bottoms and TBP waste. This leaves 477,000 gallons for first cycle and coating wastes. Assuming first cycle and coating waste volumes would be 3,500 gallons per run, 24 months of B Plant operation at 100 runs per month would result in 8,400,000 gallons of waste. The shortage resulting is 7,923,000 gallons. This shortage could be improved by evaporating all the first cycle supernatant, provided a place for resulting bottoms could be found. The volume so gained would be 8,400,000 gallons minus $(8,400,000 \times 0.36) = 5,376,000$ gallons. Then the first cycle coating waste shortage would be 2,547,000 gallons.

It is apparent that additional storage space is needed for metal waste and first cycle coating wastes. The shortage for metal waste is 2,650,000 gallons; this makes an overall East Area shortage of 10,573,000 gallons. Therefore it is recommended that in tank farm scavenging of TBP wastes be performed in the 241-C tank farm, and in plant scavenging of first cycle waste be performed in B Plant. This plan will enable the following tanks to be used for the various wastes.

C FARM		METAL WASTE BX FARM		BY FARM	
101	104	101	104	101	104
102	105	102	105	102	111
103	106	103	106	103	112

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Discussion (Continued)

B Plant (Continued)

First Cycle Waste (Continued)

<u>FIRST CYCLE SCAVENGED WASTE</u>	
<u>C FARM</u>	<u>BX FARM</u>
107 110	109 - (180,000 gals)
108 111	

<u>COATING WASTE</u>
<u>BX FARM</u>
103
109

TBP SCAVENGED SLUDGE (FROM IN FARM SCAVENGING)

<u>C FARM</u>
109
112

It has been estimated the in tank farm scavenging of stored TBP wastes in 241-C Farm would recover approximately 5,600,000 gallons of storage.

T Plant

Metal Waste

The following tanks are available for metal waste:

<u>U FARM</u>			<u>T FARM</u>		<u>TX FARM</u>	
101	104	107	101	101	103	
102	105	108	102	102	106	
103	106	109	103	103	107	
				104	108	

The chart number (z) in the Appendix indicates all of these tanks will be needed for operating T Plant through June of 1958.

Basic for Chart Number (z)

- (1) T Plant operates October, 1954 through June, 1955 at an average of 130 tons of uranium per month; from July, 1955 through June, 1958 the average production is 150 tons of uranium per month.
- (2) The volume of metal waste will be 4,200 gallons per ton of uranium.
- (3) The TBP Plant will not be able to process metal waste unless the aging is 12 months, or greater, from pile discharge.
- (4) Removal rates to the TBP Plant will be 120 tons per month when aging and East Area feed are in accord for this production rate.

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Discussion (Continued)

T Plant (Continued)

Second Cycle, 224-T, First Cycle and Coating Wastes

The remaining tanks in the T, TY, TX and U tank farms not needed for metal waste are listed below:

T FARM			TY FARM			TX FARM			U FARM
104	107	110	101	103	105	109	113	116	110
105	108	111	102	104	106	110	114	117	111
106	109	112				111	115	118	112
						112			

These tanks have a capacity of 18,488,000 gallons. At the present time 15,182,000 gallons of waste are in storage. This waste consists of sludge, evaporator bottoms, TBP waste, first cycle and coating wastes; this leaves 3,306,000 gallons to accommodate 224-B, second cycle, first cycle and coating wastes. However, 16,644,000 gallons of storage space are needed for these wastes through June, 1958. This results in a shortage of 13,338,000 gallons. The shortage could be improved by evaporating all the first cycle supernatant, provided space for evaporator bottoms could be found. The volume so gained would be: $(4,380 \text{ runs}) \times (3,500 \text{ gals/run}) \times (0.64) = 9,811,200 \text{ gallons}$. The new shortage would be 3,526,800 gallons.

Additional storage will be needed for second cycle, 224-T, first cycle and coating wastes. Therefore it is recommended that in tank farm scavenging of TBP wastes be performed in West Area, modifying the 242-T facilities for the new activity; it is also recommended that in plant scavenging of first cycle waste be continued and for coating waste to be routed to storage independently.

It should be of interest to forecast the volume of various types waste which will be cribbed due to the previously discussed volume reduction programs. Table I in the Appendix indicates the large volumes to be cribbed.

DE Peterson
Production Planning & Scheduling Unit

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APPENDIX

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TABLE I

<u>WASTE</u>	<u>EXPECTED URANIUM PRODUCTION</u>	<u>EXPECTED GALLONS TO BE CRIBBED</u>
TBP Scavenged in the 221-U Bldg.	12,150 Tons	100,602,000 Gallons
First Cycle Scavenged in 221-T Bldg.	6,570 Tons	11,215,000 Gallons
First Cycle Scavenged in the 221-B Bldg.	3,600 Tons	6,145,000 Gallons
TBP Waste Scavenged in 241-C Farm	None	6,030,000 Gallons
TBP Waste Scavenged in 242-T Bldg.	None	3,411,000 Gallons
	TOTAL	<u>127,403,000 Gallons</u>

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