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HANFORD ATOMIC PRODUCTS OPERATION - RICHLAND, WASHINGTON

DOCUMENT NO.

HW--69436

DE92 010918

TITLE

COST ESTIMATE FOR REDUCTION OF
P₂₂ IN REACTOR EFFLUENT

AUTHOR

H. B. Tolman

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HW 69436

Page 1

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April 28, 1961

ESS.
 C. E. Reed, Manager
 Product Cost and Budgets

C. A. PRIODE

COST ESTIMATE FOR REDUCTION OF P₃₂ IN REACTOR EFFLUENT

The proposal to reduce P₃₂ in reactor effluent by increasing aluminum sulphate and bauxite feed to 18 ppm while maintaining 7.0 pH water is estimated to cost \$1 368 000. This represents an increase of \$507 000 over FY 1962 budgeted cost for aluminum sulphate, bauxite and sulphuric acid.

The cost estimate was based on the following assumptions. Detail calculations are shown on Schedule I, attached.

Assumptions

1. Average TOE for six old areas 82.0 percent.
2. Average TOE for K Areas 85.0 percent.
3. Gallons treated based on six-month average flow to 183 head house adjusted for TOE.
4. Liquid aluminum sulphate used in D, DR, F, H and K areas using current contract average price of \$43.25 per ton.
5. Bauxite used in B and C areas at \$34.45 per ton.
6. Sulphuric acid priced at \$25.00 per ton.

Installation of bauxite feed facilities in all areas, currently a project proposal, would reduce the estimated FY 1962 cost \$559 000/year or \$46 500/month when completed.

H. R. Tolman

H. R. Tolman
 Product Cost and Budgets

Attachment

HRT:jld

cc: 1. RT Jessen
 2. CA Priode/E. Bailey ✓
 3. JH Roberts/V Schwinberg
 4. OC Schroeder
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HW 69435

Page 2

Schedule I

DETAIL CALCULATIONS

- A. 24 ppm of aluminum sulphate requires no acid to maintain 7.0 pH.
B. 12 ppm of acid requires no aluminum sulphate to maintain 7.0 pH.
C. 1 ppm of bauxite and 2 ppm of acid is equivalent to 4 ppm of aluminum sulphate.
D. 18 ppm of alum represents 150.3#/million gallons and requires 3 ppm of acid (25.1#/million gallons) to maintain 7.0 pH.
E. 525 600 minutes per year.
F. Average flows to 183 head house based on past six months adjusted for TOE.

B	68 100 gpm	82.0 TOE
C	102 600 gpm	82.0 TOE
D	87 200 gpm	82.0 TOE
DR	61 400 gpm	82.0 TOE
F	80 000 gpm	82.0 TOE
H	79 600 gpm	82.0 TOE
KE	165 400 gpm	85.0 TOE
KW	165 400 gpm	85.0 TOE

- G. Average flow of D, DR, F, H, KE and KW = 639 000 gpm x 525 600 minutes per year = 335 858 million gallons.

335 858 MM gals/yr x 150.3# of alum/MM = 25 240 Tons
335 858 MM gals/yr x 25.1# of acid/MM = 4 215 Tons

- H. Average flow of B and C = 170 700 gpm x 525 600 minutes per year = 89 720 million gallons.

89 720 MM gals/yr x 150.3# of alum/MM = 6 742 Tons of alum
Equivalent to 1 686 Tons bauxite
3 372 Tons acid

- I. D, DR, F, H, KE and KW

25 240 Tons alum @ \$43.25/Ton =	\$1 091 630
4 215 Tons acid @ \$25.00/Ton =	105 375
	<u>\$1 197 005</u>

- J. B and C

1 686 Tons bauxite @ \$34.45/Ton =	\$ 58 083
3 372 Tons acid for conversion @ \$25.00/Ton =	84 300
1 126 Tons acid for pH @ \$25.00/Ton =	28 150
	<u>\$ 170 533</u>

Total cost @ 18 ppm FY 1962 under present
feed system

\$1 367 538

- K. D, DR, F, H, KE and KW

Converted to bauxite feed

25 240 Tons alum ÷ 4 = 6 310 Tons bauxite @ \$34.45 =	\$217 380
6 310 Tons bauxite x 2 = 12 620 Tons acid @ \$25.00 =	315 500
4 215 Tons acid for pH control @ \$25.00 =	105 375
Using bauxite all areas	<u>\$638 255</u>

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HW 59436

Page 3

Schedule I (Continued)

L. Reduction due to bauxite conversion in D, DR, F, H, KE and KW

I.	\$1 197 005	
K.	(638 255)	
	<u>\$ 558 750</u>	Annual savings for full conversion

Equivalent to \$46 500 per month.

M. FY-1962 Chemical Budget

Aluminum sulphate	\$525 855
Sulphuric acid	308 627
Bauxite	26 010
	<u>\$860 492</u>

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H. R. Tolman:jd
Product Cost and Budgets
April 28, 1961

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