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HANFORD ATOMIC PRODUCTS OPERATION - RICHLAND, WASHINGTON

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OPERATION OF THE REACTOR COMPLEX AT
PRODUCTION LEVELS LESS THAN FULL PREDICTED
1965 CAPACITY

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April 12, 1961

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W. E. Johnson
General Manager
HANFORD ATOMIC PRODUCTS OPERATION

By Authority of DS LEWIS

4-7-92, CG-PR-2, & PR-24
TH BURSTIVE, 4-7-92

OPERATION OF THE REACTOR COMPLEX AT PRODUCTION LEVELS
LESS THAN FULL PREDICTED 1965 CAPACITY

VERIFIED BY: DK HANSON
4-7-92

Reference is made to HW-69049, "Constant Production Study," April 5, 1961, in which the economics of several different methods of operating the reactor complex, while maintaining the plutonium production rate the 1965 forecasted levels, were examined.

The estimates in this letter concern cases in which the desired HAPD plutonium production rate is from 15 to 17 percent less than the base rate used in the earlier study. The reduction could be effected by operating HPR power-only, Case I, or by shutting down two of the old reactors, specifically, F and H reactors, Case II. In Case II, it is assumed that the F and H reactors would be maintained in a standby condition at an annual operating expense, for the two reactors, of about \$1 million/year.

An interest has been expressed in layaway or "mothballing" of the two reactors rather than maintaining them in a standby condition (the "standby" condition is such that the reactors can be returned to production service in approximately 6 months). However, we do not have an up-to-date estimate of the cost of layaway of the reactor plants, and a new estimate will have to be made if required.

Although the total production from the complex under the assumed cases is not exactly the same, no attempt was made to include, for purposes of this study, any improvements to existing plants to more nearly equalize the total production rates. The difference in the production rate is about 100 kg/year out of a total production of 4800 kg/year.

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April 12, 1961

Results

As shown in the attached table, the results of the study are:

Case I The reduction from the base case out-of-pocket costs obtained by operating NFR power-only amounts to \$15.55 million per year, and \$2.9 million of new capital is required for conversion.

Case II The reduction in costs obtained by shutting down two old reactors amounts to \$21.06 million per year, and in addition, there is 98 kg/year extra plutonium production. If the plutonium production is valued at the extra annual value in this combination would amount to \$4.9 million/year. If the production is valued at the extra value would amount to \$2.9 million/year. Elimination of sustaining work at the shutdown reactors results in capital costs \$3.21 million lower than in the base case.

The results of the study indicate that Case II, operation of NFR dual purpose and shutting down two old reactors, is the most attractive of the two alternatives.

Plutonium losses due to shutdown of NFR for conversion are not included, since they were not felt to be pertinent in a study related to planned reduction in production rate. Other assumptions and bases used in the preparation of this study are the same as those used in the referenced document.

W. J. Tupper
Reactor Modification Design
FACILITIES ENGINEERING

WJ Tupper:bk

Original signed by
W. J. DOWIS

CONSULTING ENGINEER
NFR PROJECT

WJ Dowis:bk

Attachment (Table)

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TABLE I

CASES

- Base --- All reactors, including NFR operated dual purpose, operated at 1965 forecasted production rates.
- I --- NFR operated power-only; all other reactors operated at 1965 forecasted production rates.
- II --- F and H plants shut down; all other reactors including NFR (dual purpose) operated at 1965 forecasted production rates.

		<u>Base</u>	<u>Case I</u>	<u>Case II</u>
Total Production at all Operating Plants	kg/yr	5786	4797	4894
<u>New Capital Costs</u>	<u>\$-Million</u>			
Convert NFR Sustaining program at reactors continuing in operation		12.65	2.9	9.44
<u>Total</u>		<u>12.65</u>	<u>15.55</u>	<u>9.44</u>
<u>Decrease in Out-of-Pocket Costs from Base Case Level</u>	<u>\$-Million</u>			
Old reactor fuel cost				15.39
Old reactor O&M cost				5.67
NFR fuel cost			13.18	
NFR O&M cost			.20	
NFR power revenue			2.43	
<u>Total</u>			<u>15.81</u>	<u>21.06</u>

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