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# Interoffice Communication

To R. D. Gamblin

From J. A. DeBernardi

Date September 29, 1980

Subject Oxy Reactor Effluent Precooler - H-302

The following criteria have been met for the subject AFE.

1) The project cost of $127,000 is based on a plant design and definitive estimate and includes an escalation allowance.

2) Funds will be committed for the project immediately after approval.

3) The only expense associated with this project is $4,370 in sales tax.

4) Project completion is expected to be 10 months after final AFE approval.

5) No additional operating costs will be incurred because of this project.

This AFE request provides for the replacement of the existing tantalum Oxy-Reactor Effluent Precooler, H-302, with a cross-bore graphite exchanger. The shell side of the existing H-302 is in cooling water service and has not been chemically cleaned in the 12 years that it has been in service. The shell side fouling is severe and has resulted in high process effluent temperatures which can contribute to graphite failures in the Primary Product Condensers, H-303 A, B, and C. The H-303 exchangers are of graphite tube construction rather than cross-bore construction. Replacement cost of a defective H-303 tube bundle has been estimated to be $97,000.

Two solutions to the shell side fouling problem were evaluated. They are:

1) Chemically clean the shell side of the existing tantalum H-302. Fansteel Metallurgical Corporation, the manufacturer of H-302, and MED strongly advised against chemical cleaning of the exchanger. MED concluded that to avoid hydrogen embrittlement of the tubes which would result from conventional acid cleaning, that the exchanger would need to be dismantled, the tubes acid cleaned separately, and the exchanger rebuilt. The cost of chemically cleaning H-302 in this manner was estimated to be $73,000.

2) Replace the existing tantalum exchanger with a graphite exchanger designed for the high temperature service.

Even though replacement of the tantalum H-302 has a higher initial cost, it is the better solution due to compatibility with the plant expansion, the lower degree of risk, and the lower long term cost.

Currently, plans are to install a second cross-bore graphite exchanger in parallel to the graphite exchanger provided by funds authorized in this AFE in the plant expansion. The exchanger provided by this project is identical to the graphite exchanger that will be installed in the plant expansion.

A great deal of risk is involved in dismantling and chemically cleaning the existing tantalum H-302. The project would need to be accomplished during a turnaround period since no spare for the existing H-302 is available. Should problems develop during the disassembly, cleaning, or reassembly of the exchanger by the contractor, cleaning costs would increase and turnaround time would be extended. After installation of the graphite exchanger, the tantalum H-302 will be kept as a spare until after the plant expansion at which time the exchanger will be sold. The revenue created by the sale of H-302 is expected to be substantial due to the high price presently commanded by scrap tantalum. The salvage value of the exchanger is expected to offset the greater initial cost of installing the graphite exchanger.

Approval of unallocated funds are requested for this project in 1980 so that the new graphite exchanger can be ordered and delivered in time for installation during the mid-1981 plant turnaround.

J. A. DeBernardi

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