



QLH

Interoffice Communication

To J. R. Holcomb
From K. G. McLeod
Date May 7, 1979
Subject Closed Process Sewer Repair

As was discussed in the 1980 Capital Budget review meeting, the AFE for the repair of the closed process sewer needs to be written as soon as possible for the following reasons:

- 1) To AFE the project in 1979 will require the use of unallocated funds. If these funds will not be available we need to find out in time to include the project in the 1980 Capital Budget.
- 2) We have a project in the 1979 Capital Budget to reduce the exposure at the closed process sewer tank area by replacing the sump pumps, adding additional instrumentation, etc. We can not really proceed with this project until we repair the system.
- 3) Having a sewer system available also has an impact on several other AFE projects including the spare light ends dryer and liquids removal at the incinerator.
- 4) In addition, the closed process sewer is an integral part of the VCM Plant's overall plans to reduce hydrocarbon emissions and control waste water pollution.

As was also discussed, the repairs and modifications to the sewer system are largely mechanical with the exception of the vessel purging system. A process design will be issued shortly for this service. The attached listing, however, discusses the areas process engineering feels need to be considered in the redesign. Hopefully this information can be combined with the thoughts from the mechanical group to get the redesign process started. I am sure that Process Engineering, Safety, Operations, and Maintenance will all want to be involved in the selection of a grounding system, etc., as information is obtained from vendors. If any additional process information is required please contact Jim Gibson or myself.

K. G. McLeod

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cc:

JAD-HDG-GLF-JOG-WVH

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T-514 LOWER
T-512 UPPER
VESSEL

REPAIR AND REDESIGN OF THE CLOSED PROCESS SEWER

1) Equipment Grounding

Tests have been conducted in an attempt to determine the cause of the explosion in T-512. While the results are not conclusive, the evidence indicates that a static electric discharge was the probable source of ignition. All piping and vessels in the system are electrically non-conductive. Therefore, some method of grounding the contents of T-512 and T-514 is required to eliminate the possible buildup of static electricity in the vessels.

LOWER
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It is recommended that an electrically conductive non-metallic grid be installed in T-514 and grounded out through a connection in the vessel manway. A graphite or carbon-impregnated plastic grid located in the vessel such that it contacted both liquid and vapor would provide a suitable grounding surface.

It is further recommended that T-512 be replaced with a new vessel, possibly constructed of carbon-filled furan. This material would allow the electrical grounding of the entire vessel.

2) Relocate Liquid Inlet Nozzles

Tests indicate that liquid falling through vapor or impinging on a surface within a vapor space can generate an electrical potential which in turn can lead to a static electric discharge. The liquid inlet nozzles in T-512 and T-514 are located in the vapor space of each vessel.

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It is recommended that the T-514 liquid inlet nozzle be relocated so that it enters the vessel tangentially, as near to the bottom as mechanically practical. The liquid inlet nozzle on T-512 should be located approximately one foot below the side pump-suction nozzle. In addition, this inlet nozzle should be sized to accept a sparger pipe similar to the arrangement in T-110. Relocation of these nozzles will eliminate static electric generation potential from falling or impacting liquid.

3) Vessel Purge

All evidence points toward an explosion in T-512 rather than a sudden chemical reaction. This in turn indicates the presence of oxygen in the vessel. Investigators were unable to locate any source of oxygen (air) that could enter T-512 or T-514.

Never-the-less, it is recommended that a positive pressure, nitrogen purge be installed on T-512 and T-514. A nitrogen purge would maintain the vapor space of each vessel in a non-explosive range with respect to oxygen. Alternatives to nitrogen purging are presently being sought. A process design will be issued shortly.

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