

CHEMICALS



INDUSTRIES

Exhibit H-3

INTEROFFICE / LAKE CHARLES

TO See Below

DATE April 27, 1971

FROM Don Metzger

SUBJECT **CONFIDENTIAL**

Attached is your copy of the Hazard Review report for the Per-Tri Expansion, including the new TCE Plant.

DM/jg

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SL 050568

SUBJECT Hazard Review of Per-Tri
Expansion, Including New
TCE Plant

Hazard Review Team: Richard, O'Neal, Carley, Carter, Gorton, Metzger

Summary

This report summarizes the Hazard Review of the Per-Tri expansion, including the new TCE Plant. Two groups of questions have been formulated as a result of the review. The first group is composed of unresolved questions which require further consideration. The second set of questions are resolved, or at least partially answered. Some of this second set of questions involve procedures which are adequate, but are presented for future reference. In general, the plant is very well engineered. The major questions deal with further back-up on instrumentation and the possible need for further overpressure protection.

Discussion

The Hazard Review of the Per-Tri Expansion included equipment design, fire protection and process safety. The reviews were conducted by using the Hazard Review Manual and associated checklists. The review of the expansion project by the team members in meetings consumed approximately 44 manhours. The existing Per-Tri equipment which will be reused in the expanded plant has been reviewed and will be discussed in the Hazard Review report for the existing Per-Tri plant.

Unresolved Questions

A. New TCE Plant

1. The EDC to be used in the AIBN tank will have some unsaturated light components from the OHC-EDC. Will these light components be polymerized by the AIBN?
2. High liquid level in the TCE Reactor Condensate Surge Tank could result in overpressure of the TCE Reactor (design HCl flow is 234,500 sch), subsequent operation of the TCE Reactor SRV and loss of HCl flow to OHC. Is a back-up level transmitter and alarm needed?
3. The cooling tower basin could be pumped empty between operator rounds in the event of loss of the make-up level control system. Is a back-up level alarm needed?

4. The chlorine supply line isolation block valve to the new TCE plant area is not accessible. Should a valve be installed at a readily accessible location?
- B. Per-Tri Plant Expansion
1. Does the increased volume of flammables created by two Tri Still Reflux systems and the Tri Reflux Dryers warrant fire protection in this area?
 2. Is overpressure protection needed on the oxygen preheater or TCE preheater?
 3. The DH Stills cannot be isolated from the Secondary Condenser. Are isolation valves needed?
 4. The design pressure of the Degassers and Reactor Secondary Condensers are 50 psig, while the operating pressure will be 40 psig. A foreseeable upset in pressure could blow the rupture disc. Also, the graphite rupture discs have questionable reliability at settings this close to operating pressure. Should SRV's mounted over rupture discs or some other type of rupture disc be considered?

Resolved Questions

A. New TCE Plant

1. Question: The original prints show an automatic shutdown of HCl feed to the OHC plant if the chlorine content exceeds a certain level. Is the probability of substantial chlorine breakthrough great enough or is the chlorine analyzer reliability good enough to warrant automatic shutdown?

Answer: This analyzer will be used to indicate and alarm only.

2. Q: The original prints show a two-position vent pressure control valve to the Scrubber coming off downstream of the system PCV. This type of control and take-off point could result in serious upsets both in the TCE plant and in OHC. Should other methods of control be considered?

A: The take-off point has been relocated upstream of the system PCV and a proportional mode of control will be used.

3. Q: The steam PCV to the Chlorine Vaporizer fails in the closed position with loss of supply air. Should failure in the open position be considered?

A: This PCV will be changed to allow failure in the open position.

4. Q: Should an alarm be provided on vaporized chlorine temperature?
A: An alarm will be added.
5. Q: Failure of the chlorine PCV in the open position could result in operation of the Chlorine Surge Drum SRV. Are means provided for working on the SRV without requiring a plant shutdown?
A: The Surge Drum can be bypassed to allow SRV maintenance.
6. Q: The HCl temperature to OHC is not alarmed. In the event of loss of steam to the heater, could enough liquid condense in the line to give problems at OHC?
A: The temperature will be checked routinely by the operator, and the surge drum at OHC will remove any foreseeable condensate.
7. Q: Is overpressure protection needed on the Lights Still Feed Heater or the cool side of the Crude TCE Cooler?
A: No. These exchangers would be isolated only during shutdowns.
8. Q: Is a steam snuffing line needed on the Scrubber Vent Stack?
A: No; this vent will normally be non-flammable.
9. Q: The overhead streams from the OHC Lights Still and the Tri Stills will be fed to the new TCE Reactor. Are any components present in these streams which could lead to problems?
A: These streams contain some unknown or doubtfully identified lights. These components should be identified.
10. Q: Are excess flow valves needed on sight glasses?
A: All vessels containing flammable mixtures or operating at about 20 psig or more will have excess flow valves.
11. Q: The mechanical flow sheet shows a block valve in the vent off the acid tank. Is this acceptable?
A: This valve is not needed and will not be installed.
12. Q: Are all steam lines protected by steam traps?
A: The piping drawings will be checked and traps installed as needed.

Why not use
3 way valve?
Remove surge drum
bypass piping?

B. Per-Tri Plant Expansion

1. Q: What are the consequences of getting oxygen in the steam condensate? Should the Oxygen Preheater steam condensate be sewerred?
A: Oxygen in the condensate could lead to corrosion and the condensate will be sewerred.
2. Q: Can the Oxygen Preheater enter the hazardous temperature range under foreseeable circumstances?
A: The temperature is alarmed and only 30 psig steam is used. This should provide adequate protection.
3. Q: Is overpressure protection needed on the new filters or the Heavies Still Bottom Dryers?
A: No overpressure protection is needed because the filters are small and the material in the Heavies Still Bottoms Dryer has a very high boiling point.
4. Q: Is fire protection needed for the new refrigeration unit?
A: FIA classified the unit as non-hazardous, requiring no fire protection.
5. Q: A desuperheater will be used on the 170 psig steam system in order to meet the pipeline and valve specifications. Will use of the desuperheater cover all foreseeable circumstances?
A: The line has two SRV's to protect against overpressure, and the steam temperature is alarmed. Foreseeable circumstances have been considered and appear to be covered.
6. Q: Are spare parts being set up?
A: Recommended spare parts lists are being obtained from all manufacturers. The appropriate spare parts will be set up by the project team.
7. Q: Do the discharges of the safety relief devices on the DH Still, Tri Reflux Dryer or refrigeration unit present personnel safety hazards?
A: The discharge point will be checked on these devices.

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