Exhibit 1

CHEMICALS LC INDUSTRIES

INTEROFFICE / LAKE CHARLES

TO John Hart

DATE March 19, 1982

FROM Roy Sanders

SUBJECT Loss Prevention Review of the Per/Tri Plant

Attached is a comprehensive Loss Prevention Review of the Per/Tri Plant that was developed by Jim Wood over the past two and a half months with the help of Arville Hoffpauir and Joe Martin for the Per/Tri Plant.

At some future date, perhaps six weeks or so from now, an Operations Review Subcommittee will be scheduled to receive input from others to determine the type of follow up that will be required.

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cc: R. E. Baker - Cover Sheet Only
J. E. Fike - Cover Sheet Only
J. G. Peck - Cover Sheet Only
T. K. Ezelle - w/Attachments (2)
R. P. Lynch - w/Attachments
J. H. Morgan/D. T. Rigler - w/Attachments
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CHEMICALS — INDUSTRIES — INTEROFFICE / LAKE CHARLES

TO Roy Sanders

DATE March 18, 1982

FROM Jim Wood JHW

SUBJECT Loss Prevention Review of Per-Tri Plant

Eleven years ago Don Metzger conducted a Loss Prevention Review of the Per-Tri Plant and five years ago Bill Cleary completed a Reliability overview of Per-Tri. Current loss control philosophy requires subsequent reviews at periodic intervals determined by conditions where significant loss potential may exist, both as a follow up to other reviews and as an update where operating procedures or other changes may have occurred. As such, a Loss Prevention Review was conducted from the latter part of January to the early part of March, 1982.

For background study, mechanical flowsheets, operating manuals, SOP's, other reviews, abnormal operating incident reports, and Loss Prevention files were reviewed. The General Office Project Loss Prevention Manual was used as a guide. Questions w re prepared which were resolved in several meetings with Arville Hoffpauir and Joe Martin. The unresolved questions from previous reports were also reviewed with the unit foremen. The format of this report is the same as all Loss Prevention Reviews. Unresolved questions are asked first, then some of the resolved questions are asked and answered.

UNRESOLVED QUESTIONS

1. Loss of oxygen can occur due to control station failure. Loss of oxygen flow to a reactor has resulted in backflow of organic vapors into the risers and explosion of oxygen rotometers. Total oxygen flow to the Per-Tri Plant is alarmed, but individual reactor oxygen flows are not. Shouldn't deviation switches be installed which would alarm on loss of oxygen and activate the fluidization nitrogen automatically? This need not necessitate an oxygen trip however. Since the oxygen flow control valves are run on manual all the time, failure of an oxygen flow transmitter will not cause the flow control valve to go wide open.

2. Oxygen breakthrough in the reactor can result in dome fires and explosions. The OHC plants have continuous oxygen analyzers but it appears that no oxygen analyzers have proven suitable in Per-Tri because of the HCl present. Since reactor vents are not recycled it is thought that high oxygen in the vent due to feed imbalance is not as critical as in the OHC reactors. But feed imbalances can occur with composition changes in Per-Tri feed stock when a Tetra tank is switched. Flow transmitters may be out of calibration. High oxygen can also result from bad tubes or low catalyst level. Are oxygen analyzers needed?

3. The primary condensers are protected by flush water which high temperature switches were designed to activate. The drawings show such a system. Shouldn't an effort be made to make this system operational and then entered on the prooftest schedule? Currently an operator must open an MLS.

4. Are check valves needed on the flush water lines to the reactor primary condensers? This was agreed upon in 1971, and it appears that check valves exist on only Reactors 3 and 5 flush water. Flush water is well water which supplies eyewash stations and safety showers from the same header. There are two automatic valves on each flush water line. Nevertheless, these are permanent well water ties such that well water can be contaminated with organics and HCl. Is a check valve enough with current Louisiana law?

5. The chlorine vaporizer and surge drum system has not been used for years because the heavy feedstock from the Tetra Plant contains only 2 or 3% EDC material. It was recommended in the 1977 review to install anti-backflow features on the chlorine to the reactors. The RES was written, the job was engineered, but was cancelled because the chlorine system is not used presently. Shouldn't the chlorine system be blinded off from the process now?

6. The startup scrubber and startup scrubber K.O. pot may contain flammable atmospheres at some time. Should a nitrogen purge be installed?

7. The condensate feed to the steam drums used to be treated by chemical addition, a blowdown was taken, and frequent sampling and analyses were made. The treatment chemicals were added to prevent corrosion and scaling in the steam drums. It has been ten years since the water treatment was discontinued. In 1980 the Betz water treatment experts inspected the steam drums and reboilers, found no evidence of corrosion or failures, and therefore made no recommendation to resume condensate treatment. Apparently the steam condensate is sufficiently pure that failures due to corrosion are not a significant concern. Once a day, the main lab runs an analysis on the condensate for pH, ammonia, hardness, and conductivity; but Operations doesn't use the data for anything. Shouldn't these laboratory tests be compiled and the data evaluated over long periods of time for indications that may lead to failures?

8. Weep holes are drilled into the discs of the dowtherm isolation valves to protect the furnace coils from liquid expansion. These holes are never inspected for plugging since the whole system would have to be drained. A tiny thermal relief SRV would do the same job as a weep hole and could be tested periodically. This item has been addressed extensively by many knowledgeable people, and the decision was made to provide a hole in the disc because a dowtherm release from an SRV was considered undesirable. Is this really the best position?

9. On the P/T Dowtherm Heater, there is a time delay relay that times out the pilot during the trial-for-ignition, but there is not a trial-for-pilot timer requiring a purge after trial for pilot when the pilot failed to light. National Fire Protection Association Codes require a 10 - 15 second trial-for-pilot and a 10 - 15 second trial-for-main burner. Any extension of the time limit must entail positive proof that no more than 25% of the lower explosive limit exists in the furnace. Can this requirement be met?

10. The BLM Tank 60-647 is protected by a 4" Groth Tank Vent which is sufficient for all conditions except fire exposure. Is fire exposure from a BLM pool fire sufficient to consider installation of an emergency relief vent?

11. The Ammonia Tank 60-528 is protected by an SRV which is sized for the normal potentials of a non-flammable material stored in a non-flammable area. When the Dowtherm Heater was relocated it was assumed that with the well designed drainage and the distance between the heater and the ammonia tank that a Dowtherm fire would not significantly involve the ammonia tank. Also, due to the very peculiar, almost non-flammable nature of ammonia, the original designers apparently assumed that ammonia fires would not last sufficiently long to warrant fire sized SRV's. Are these assumptions still valid?

12. Do the control valves in the still line area need to be reviewed for optimum failure positions, since many discrepancies exist from one still to another? An engineering study may be needed to evaluate the best method.

13. Low pressure nitrogen regulators, such as tank pad regulators, can explode if the downstream block valve is blocked and the regulator leaked through. Should the regulators be replaced or should the downstream blockvalves be removed? As a minimum, warning signs can be installed at regulator locations warning an operator not to block the downstream blockvalve.

14. Trichloroethylene is flammable in air from 10% to 40%, especially at temperatures above ambient. Hot air is used to regenerate trichlor dryers. There is currently a project to send the off gas to a contact scrubber. Does fire or explosion potential exist in this system? Should nitrogen be used for regeneration?

15. Trichloroethylene is detonable in oxygen. One incident occurred when an oxygen heat exchanger exploded. The exchanger had been degreased with trichlor, and apparently some trichlor was still trapped in voids. What precautions should be taken not to use trichloroethylene for degreasing equipment in O_2 or Cl_2 service?

16. Grounding and bonding of pipelines with star washers when they carry flammables or combustible liquids or vapors may need more emphasis. How can assurance of this be best guaranteed? This question has been brought up in the previous reviews.

Operations could check each maintenance job for proper bonding. This type of procedure needs continuing emphasis, and perhaps followup by Loss Prevention.

17. The atmosphere above the acid pit may be flammable at times. Should a slight nitrogen sweep be applied to prevent an internal deflagration such as recently occurred in one of the tanks in the Sodium Formate plant?

18. Should the ammonia refrigeration unit automatic shutdown system be listed on the prooftest program? The refrigeration unit has preventive maintenance performed on it when it is down for an outage. Loss of the unit would cause large losses out the vent.

19. Should the sprinkler system be flowtested? The Fire Chief questions the integrity of the sprinkler system at Per-Tri due to the effects of corrosion on sprinkler piping, and the Loss Prevention Engineer questions the water coverage for upper level sprinklers.

RESOLVED QUESTIONS

1. Are the Kay-Ray level indicators on the vaporizers properly shielded and periodically tested for leaks, and are caution signs and symbols used and is a certified person present when the unit is serviced?

   Ans. Yes, we think so. Caution signs warn personnel to contact the safety department when work is to be done on the Kay-Ray level indicators. Operations is trying to upgrade the system.

2. The failure positions of the absorber level control valves to the acid pit LCV-509 and 509A were supposed to be changed in November 1977 to fail open. Was this done?

   Ans. Operations agreed to investigate and assure that they do fail open.

3. Are chlorine and oxygen bypass valves sealed and logged?

   Ans. Yes, in a visual inspection the oxygen bypass valves were found sealed, whereas no seals were found on the chlorine. However, no chlorine has been used since 1979.

4. Can a steam leak in an organic vaporizer be easily detected?

   Ans. Yes. If water gets in the system, the reactor bed temperature would scatter, there would be problems in the pressure control system, and the reactor would be shut down and tested.

5. Should reactor crude be analyzed for Dowtherm to detect tube leaks which would occur with a Dowtherm pressure higher than reactor pressure?

   Ans. No. Periodic sampling would not be of benefit. Since reactor pressure can be either higher or lower than the Dowtherm pressure, a reactor tube leak can go either way. That is, if reactor pressure was higher than the Dowtherm pressure the hotwell condensate would contain organics. A Dowtherm leak into the reactor can be detected by existing parameters and alarms such as bed temperatures. There were seven tube leaks last year and operations found every one prior to equipment damage.

6. The Dowtherm system of the five reactors is common. Are adequate measures taken to clear Dowtherm lines before welding is done?

   Ans. Yes. Lines are blinded, washed with condensate and completely cleared.

7. A leaking Dowtherm valve on the circulation system would result in emptying the Dowtherm level in one reactor while overfilling another. Is proper Dowtherm level assured in the five reactors?

   Ans. Yes. The operator monitors the levels very closely by sight glasses when recirculating Dowtherm. If they are not recirculating there is no problem because the reactors are double-blocked from one another.

8. What measures are taken to prevent a reactor from being emptied of Dowtherm through a cracked valve and result in overflow of the storage tank and potential vapor cloud?

   Ans. There are double blocks on the tank, the pumps, and the reactors.

9. Are temperature alarms and operator checks on rotameter flows and pressures enough protection to avoid losing a tube or having a dome fire, or should variations in oxygen flow through individual rotameters or pressure changes in individual mixed feed windboxes be detected sooner?

   Ans. The reactor tube temperature alarms are quick enough to detect these conditions.

10. Are mixed feed header steam traps on a periodic inspection schedule and can a malfunctioning trap be detected?

    Ans. Yes. The traps are changed out on total overhauls, and the operator monitors the temperatures twice a shift.

11. The SRV on each Dowtherm condenser is set at 110 psig and nitrogen pressure is 80 or 90 psig. Shouldn't there be a high pressure alarm on the Dowtherm system to detect pressures above the set point of the controller to avoid getting Dowtherm vapors into the nitrogen system?

    Ans. There is a check valve on the nitrogen line.

12. Is Dowtherm-soaked insulation removed to prevent self-heating and lagging fires? Are valves in the horizontal position?

    Ans. Yes, the insulation is replaced if it becomes soaked from leaks. All valves except the suction of the pumps are horizontal.

13. Is there a checklist in the operating procedure manual for closing and re-opening valves for shutdown purposes which includes installation and removal of blinds?

    Ans. Yes, the lists are included in the SOP.

14. Are operators trained and retrained in startup, shutdown, and emergency procedures?

    Ans. Yes, both individual and shift type situation responses.

15. Is the condensate collection tank and steam drums internally inspected for corrosion?

    Ans. Yes.

16. Since vents from the DH secondary condenser can be blocked in, is an alarm needed?

    Ans. There are in fact two alarms -- the high pressure alarms on the DH Stills.

17. Should sight glasses be installed on the Dowtherm burp pots to detect a plugged or frozen drain line?

    Ans. No. Sight glasses would not be useful since the Dowtherm would freeze in the sight glasses also.

18. Is a high pressure alarm needed on the ammonia tank?

    Ans. Yes, operations is in the process of getting this worked on to make it operable.

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