

Board of Review Report

Vinyl Emission

Henry Plant

Summary

On Friday, September 15, 2000 at 1:00 p.m., an emission of vinyl chloride monomer occurred. The emission was calculated to be 370 pounds. The vinyl was emitted from an open bleed valve on the polymerizer charge manifold for Poly 38. No one was injured, but several employees on the floor at the time of the incident smelled vinyl chloride.

Board of Review

A Board of Review was conducted immediately following the incident. The following were present:

Bill Duke – D Shift Operations Supervisor
DCS Charge Operator
DCS Charge Operator
DCS Charge Operator
Line 2 Process Engineer
Scott Johnson – HS&E Supervisor
Ron Kaminski, Jr. - Manufacturing Manager
Joel Lindahl - Plant Manager
Steve Wennerholt – HR Manager

Narrative

On Friday, September 15, 2000 at 1:00 p.m., a leak of vinyl chloride occurred from Poly 38 located on 3rd floor of Poly Building 731. Maintenance Man first observed the leak and reported it to DCS Charge Operator. After quickly assessing the situation, notified Bill Duke, Operations Supervisor, via radio. then proceeded to the South 3rd floor exit and pulled the gas alarm. After gathering in the designated safe haven in Dryer Building 732, briefed Bill of what was transpiring. Bill immediately dispatched a runner to the access road into the plant to block incoming traffic. Bill informed Scott Johnson, HS&E Supervisor, of the details and they immediately responded by donning Scott air packs and entered the Poly Building. Bill shut the outlet valve on the 2nd floor vinyl filters to ensure no vinyl chloride was still pumping. Bill and Scott proceeded to 3rd floor to further investigate. The investigation pointed to a leak on 3rd floor at Poly 38. joined the investigation and entered 3rd floor with Bill. Water was then sprayed on Poly 38, revealing the source of the leak to be an open bleed valve on Poly 38 charge manifold. immediately closed the bleed valve stopping the leak at 1:20 p.m. The plant all clear was blown at 1:30 p.m. Notification of all regulatory authorities began immediately and was complete by 1:45 p.m. No one was injured as a result of this incident.

Facts Surrounding the Incident

1. The valves installed on the large poly expansion project are subject to fouling and frequent maintenance. As a result of the split body design, to clean or repair these valves they must be removed from the line where installed and generally be rebuilt in the maintenance shop.
2. Poly 38 inlet valve was in need of maintenance. Maintenance was notified they would be called to rebuild the valve at the end of the next charge, and this would occur on the night shift of Thursday September 14. In order to maximize isolation points, all 4 large polys were shut down and VCM removed from the entire header.
3. The line was prepared by the night shift DCS charge operator in accordance with procedures, evacuating the valve through the line into Poly 38. At this point, the bleed valve was not needed to complete the evacuation. An isolation check sheet was not readily available and the Operations Supervisor procured one and assisted in preparing the check sheet as the DCS charge operator performed lockout/tag out activities. Not realizing his

REDACTED

NGC 01376

Supervisor had already completed the check sheet, the operator subsequently located a form and completed a check sheet.

4. Maintenance personnel (2) reviewed the status of the valve isolation and subsequently requested the opening of the bleed valve to verify that the line had been completely evacuated. The bleed valve plug was removed and the bleed valve was opened. The valve requiring maintenance was pulled and taken to the shop, where it took several hours to rebuild.
5. The valve repair took until the end of the night shift to complete. At shift change, the DCS charge operator working nights discussed the status of his equipment to the day shift DCS charge operator, including the status of Poly 38.
6. At completion of the valve maintenance, the day shift operator began placing the large polys back in service. He charged Poly's 37, 39 & 40 without incident.
7. To place the line back in service, the day shift operator removed locks from valves and reconnected valves to instrument air service for automated valves. The operator failed to close the bleed valve or notice that it was open. The bleed valve is a ½ inch, ¼ turn valve at the end of a short section of pipe.
8. Normal practice is to pressure test piping in VCM service once maintenance has completed the work on the line. This was not done, nor was the status of the bleed valve noted in a pre-charging process check by the operator. The bleed valve plug was not replaced, leaving an open-ended line.
9. The day shift operator had scheduled a ½ day vacation to begin on Friday afternoon. One of his final activities of the day was to begin charging Poly 38 and hand off his equipment to the operator scheduled to cover his vacation.
10. Shortly after the handoff, the leak was detected.
11. All Poly Building personnel evacuated building and went to the Dryer building, per the Gas Alarm procedure.
12. Bill Duke instructed Tank Farm Operator, to shut down VCM pumps at Tank Farm.
13. J secured on OVA and went to Tech Trailer to monitor VCM levels
14. After taking OVA readings, it was deemed safe for to enter Tech trailer for remote computer operations for the Large Polys.
15. and Bill checked status of all Poly's running at the time of the incident and communicated that information to personnel in Tech Trailer.
16. Bill checked status of building VCM detection lights and communicated VCM concentration remaining in building.
17. Scott and communicated to Tech Personnel to AMS shortstop Poly 38 and put poly on recovery.
18. Dryers were shut down at approximately 1:10 p.m. as precautionary measure to prevent intakes from drawing in any VCM.
19. All clear was sounded at 1:30 PM
20. All regulatory agencies were notified promptly of the incident.
21. Several BFG personnel were confused as to where to go during a PolyOne gas alarm. The PolyOne alarm does not sound on the BFG side of the plant, but a PolyOne evacuation point is on the BFG side.

Management Systems Inquiry

1. A review of the management systems concluded existing systems should have prevented this incident from occurring. These include pressure checking the affected piping and valve assembly, rechecking the reactor vacuum when prompted and better visual inspection by the operator.
2. Operator did not verify bleed valve was closed following maintenance earlier that morning on Poly 38.
3. Operator received DCS alert that vacuum was not achieved on Poly 38.
4. DCS asks if you want to recheck vacuum before charging process can continue.
5. DCS was prompted to continue without recheck of vacuum.
6. Bleed valve was not listed on Isolation checklist.
7. Piping was not pressure checked following maintenance and prior to charging.
8. Operator has 20 years experience with the Company.
9. Operator was certified 10/27/99 as DCS Charge Operator.
10. Appropriate disciplinary action was taken.
11. Isolation check sheet is not used to revert equipment back into service following isolation.

Conclusions

It is the opinion of the Board of review that the incident could have been avoided and was caused by operator error.

Corrective Actions

1. Schedule 30-day follow-up blood test for potentially exposed operators. Johnson Complete 9/15/00.
2. Obtain leak detection data from mass spec and verify system worked as designed. Johnson Complete 9/15/00.
3. Evaluate upgrading fresh air masks to allow better visibility and communications during an incident. Johnson 12/31/00.
4. Calculate amount of vinyl chloride released and include in 10-Day report to EPA. Kaminski Complete 9/15/00, Johnson 9/25/00.
5. Paint bleed valves for visual effect. Kaminski 9/30/00.
6. Evaluate vacuum check procedure for large polys to verify vacuum leak was detected. Kaminski Complete 9/18/00.
7. Consider establishing operating procedure for charging polys, specifically visual verification of plugs and valve positions prior to charging. Kaminski 9/30/00.
8. Evaluate installing limit switches on bleed valves. . by 10/15/00.
9. Evaluate/Revise isolation check sheet to include valves out of position, converting isolation sheet to multipart (carbon) form, and practice of discarding isolation check sheet following the job. Have sheet go back to operator at job's completion, then be returned to Safety Dept. Johnson/ /Kaminski 9/30/00.
10. Complete training with plant personnel on isolation check sheet modifications. Johnson Kaminski 10/31/00.
11. Consult with Pedricktown to review DCS organizational structure. Kaminski 11/30/00.
12. Review incident with all employees at monthly Safety Meetings. Johnson by 10/15/00.
13. Document best practice for pressure checking VCM service lines after maintenance and train all employees. Kaminski 10/15/00.
14. Review incident with BFGoodrich. Johnson/Lindahl Complete 9/18/00.

95
HENRY

I N T E R O F F I C E M E M O R A N D U M

Date: 05-Dec-1995 04:46pm EDT
From: JOHNSONS
JOHNSONS@HNY@MRGATE@CLE
Dept:
Tel No:

Use RDL option to see message distribution.

Subject: NARRATIVE REPORT - VINYL CHLORIDE RELEASE FROM POLY 6 - HENRY PLANT

THE GEON COMPANY, HENRY, ILLINOIS
VINYL CHLORIDE RELEASE
BOARD OF INQUIRY

Summary and Cause of Incident

On November 8, 1995, at approximately 3:40 P.M., poly #6 rupture disc failed prematurely releasing vinyl to the atmosphere. Earlier that day, maintenance was done on the poly to remove buildup in the line going to the rupture disc. The rupture disc assembly was removed during the work and was re installed improperly, leading to a rupture disc failure when the poly was charged. The resulting release of vinyl chloride was reported to appropriate agencies, according to established Geon policy.

Board of Review:

A preliminary Board of Review to gather facts surrounding the incident was held on 11/08/95 at 18:09 hours in the Geon Trailer. The following were in attendance:

Terry Castor	Utilities/Maintenance Manager (also acting Plant Manager)
Ron Moore	Poly Operations Supervisor
Jim Ziegelmeyer	Blending Process Engineer
Ken Prather	Dispersion Process Engineer
Rob Calder	Safety Engineer (also acting Environmental Engineer)
Neil Thie	Poly Team Leader - C Shift
	Poly Charge Operator - D Shift
	Poly Charge Operator - C Shift
Tom Carson	Custom Contract Services Supervisor

A formal board of Review was held on November 9, 1995 at 14:00 hours in the Royal House #1 Conference Room. The following were in attendance:

Juan Canella	Plant Manager
Terry Castor	Utilities/Maintenance Manager
Bill Miller	HR/HS&E Manager
Ron Moore	Poly Operations Supervisor

REDACTED

NGC 01379

m Ziegelmeyer	Blending Process Engineer
Ob Calder	Safety Engineer (also acting Environmental Engineer)
Ken Prather	Dispersion Process Engineer
Neil Thie	Poly Team Leader - C Shift
	Poly Charge Operator - C Shift
Tom Carson	Custom Contract Services Supervisor
Leon Hughes	Custom Contract Services Employee
Don Moriarty	Maintenance Team Leader

Corrective Actions:

1. Re-emphasize correct rupture disc change out procedure and installation training with all plant personnel at the Plant Wide Communications Meetings on 11/15/95 and 11/16/95. - Terry Castor/Juan Canella

2. Modify rupture disc assemblies on Polys #1-#6 such that the J hook and companion flange are functional and assemblies are installed correctly: Rupture disc assemblies similar to the ones on poly #1-#6 will be installed on the remaining polys as necessary. - Steve Smith 11/17/95

3. Only certified Geon personnel will be allowed to work on lines with rupture discs. - Ron Moore Immediately

4. Evaluate installing relief valves on the polys with Corporate Engineering. Meade Bethel 12/95

5. A SWAT Team including MB/SJ/RC was formed to address the following:

Evaluate current safety and environmental policies and procedures to develop the best guidance for employees during an emergency situation.

- Develop a system to ensure only certified personnel perform maintenance activities on VCM related equipment. (This system would replace the additional sign-in policy which was implemented as an immediate measure).

- Refresher training on Management of Change for all plant employees to increase awareness of requirements in a process safety management area.

6. The Poly Team Leader or designated management will sign in/out every work order dealing with equipment in VCM service, in addition to the normal signatures, until the SWAT Team completes its review. Done

7. Update procedures to improve timely response to the environmental agencies. Scott Johnson 1/96

8. Appropriate disciplinary action will be taken.

Narrative:

On 11/8/95, told Neil Thie the spool piece to poly #6 rupture disc was showing buildup and should be cleaned. Neil Thie entered the work order into CHAMPS (WO #9504977) and sent it to Don Moriarty, Maintenance Team Leader. The work order was done by contract employees Tom Carson and Leon Hughes. The

NGC 01380

Normal cleaning procedure for this nozzle is to disconnect the line at the poly which leaves the rupture disc assembly in tact. On this job, they removed the spool piece for cleaning. They finished the job around 1:30 P.M. and the poly was turned over to production. Hence, the most recent work on the poly on 11/8/95 by the contractor resulted in the rupture disc assembly being re installed incorrectly. The first charge in poly #6 after the maintenance (WO #9504977) resulted in the failed rupture disc. This was E-14(0), charge #1517. The charging was completed at ~15:25 then steam sparge (heatup) was started. The rupture disc failed at ~15:40 at 145°F and 151 psia. The rupture discs in the assembly were Zero rated 250 psig discs. The normal E-14(0) reaction temperature is 159°F and 170 - 180 psia. [redacted] heard the rupture disc fail. He informed [redacted] what had happened. At ~15:42 hours, [redacted] told [redacted] Recovery Operator, he was going to open the poly to the blown down tank. Before [redacted] went to the mezzanine floor to open the poly bottom valve, the poly #6 pressure was 126 psig. It took [redacted] ~1-1.5 minutes to open the bottom valve and return to the third floor panel room. When [redacted] returned, the poly pressure was 8 psig. In addition, the charge was also opened to poly #8 (at the same time it was being opened to the blow down tank) which was on vacuum. Poly #8 went from -14.3 psi to -1.3 psi (equalized).

Facts Surrounding the Incident:

1. Cleaning buildup out of the spool piece is a common task that has been performed 20-30 times per year.
2. The previous rupture disc change on poly #6 was on 10/19/95 (WO #9504634) when the rupture disc was changed from a 225 psig rated disc to a 250 psig rated disc. This was being done for an E-14(0) run. The E-14(0) run following this rupture disc change was a total of 40 charges.
3. Vince Stalsis, A Shift Poly Team Leader physically verified that the rupture disc assembly on poly #6 was installed correctly on 11/8/95 at 01:00 hours.
4. No poly alarms occurred during the incident. However, the poly did not reach the pressure setpoint for the alarms. The poly was on high settings: 190 psi alarm, 200 psi burp. Instrument verified that the alarms did trip at the proper pressure on 11/8/95 @ ~19:30 hours.
5. Poly Bldg VCM detection lights were activated as a result of the incident. The monitor readings reached 80 ppm VCM.
6. No one was exposed to VCM as a result of this incident. Appropriate PPE was used accordingly.
7. The poly #6 rupture disc assembly has a J hook. The J hook fits into a companion flange that has a hole in it for the hook. The hook is designed to help prevent the rupture disc assembly from being installed upside down. In addition, the rupture disc assembly also has an arrow stamped on it that shows the proper orientation for installation. Poly #1-#6 have rupture disc assemblies with J hooks. However, not all of the companion flanges have holes drilled in them for the hook. Where there is no hole in the companion flange, the J hook was bent back to allow installation. All new GFN type rupture disc

assemblies have J hooks. Poly #6 did not have a hole in the companion flange for a J hook.

8. Only certified persons (trained by BS&B or other equivalent) are allowed to perform rupture disc work. No persons within the contractor service involved have been certified to perform rupture disc work. The contractor decided to remove the assembly without checking with any Geon employees. When the rupture disc assembly was removed during the cleaning of the line, someone certified to perform the rupture disc replacement/re installation was required. This was not done. The contractor re-installed the rupture disc assembly.

9. The poly charge ticket for E-14(0) charge #1517 showed that the correct amount of water (1240 gallons) and VCM (9000 lbs) were charge to the reactor.

10. Approximately 10 different employees from the contractor involved have cleaned piping systems over the past 2 years. They were cleaning nozzles, not dealing with the rupture discs. The contractor started with cleaning condensers. Their scope of work progressed to nozzles, Ys, etc. They were trained by the Geon mechanical crew.

Management Systems Investigations:

1. The maintenance work order policy was followed properly. However, the work order description was not sufficiently specific.

2. Contractor training systems will be evaluated to assure compatability with Geon requirements.

Conclusion:

The rupture disc assembly in poly #6 was installed improperly which led to a premature failure of the discs and a subsequent release of VCM.

TO	FIELD POINT OR DEPT & BLDG. NO.	DATE YOUR LETTER
Distribution		
FROM	FIELD POINT OR DEPT & BLDG. NO.	DATE THIS LETTER
R. D. Moore	Henry	June 11, 1992
SUBJECT		

BFGOODRICH - HENRY PLANT
GEON VINYL DIVISION
BOARD OF INQUIRY
VINYL MONITORING DATA ABOVE 1 PPM

File

SUMMARY

From January 1 thru May 15, 1992, five Geon employees had vinyl monitoring data above 1 PPM. A Board of Review* was held on June 10, 1992 with the following in attendance:

Phil Donataccio	- Plant Manager
Mike Guyer	- Geon Manufacturing Manager
Diana Friesz	- Environmental Engineer
Dave Giffin	- Safety Manager
Jim DeWalt	- B Shift Poly Building Foreman
Ron Moore	- Sr. Process Engineer
	- Dispersion Charge Operator
	- S&E Operator
	- Suspension Charge Operator
	- Dryer Operator
Neil Thie	- C Shift Dryer Building Foreman
Dave Rodgers	- B Shift Dryer Building Foreman

*Board of Review was held based on recent Grahek correspondence requiring investigations for all exposures greater than the PEL where PPE was not used.

NARRATIVE

The monitoring data revealed the following information:

1. 1.6 PPM for resin. on 1/31/92 while charging Suspension
2. 1.1 PPM for Neil Thie on 3/22/92 while cleaning the Ultrafiltration unit.
3. 1.5 PPM for Reclaim process. on 4/3/92 while operating the Resin
4. 1.4 PPM for LoSope resin. on 4/3/92 while charging and recovering
5. 3.6 PPM for resin. on 5/15/92 while charging F76 and 213

REDACTED

FACTS SURROUNDING THE INCIDENT

1. Charging Pearl resin on 1/31/92.
2. He was absent from the meeting due to a recent transfer to the LaPorte Plant.

Neil Thie

1. An experienced Foreman in the resin area.
2. While performing his normal duties, he assisted in the clean-up of the Ultrafiltration unit.
3. Past personal monitoring data has not shown high monitoring results for this task.
4. The building ventilation fans were not working properly, therefore Ammonia fumes were higher than normal in the building.

1. has 3 years of service in the resin area.
2. He was operating the Resin Reclaim Dryer on prime material.
3. He bagged some resin while operating the dryer.
4. The dryer press was leaking water during the cake wash cycle due to a faulty diaphragm plate.
5. was experiencing some feed plugging problems to the dryer.
6. He did not enter the Poly Building on this day.

-
1. has 17 years of service in the Geon area.
 2. He was charging and recovering LoSope.
 3. Building monitoring lights were low:
 - 5 lights above 1 PPM
 - 2 lights above 3 PPM
 - 0 lights above 15 PPM
 4. The monitoring badge was exposed to Aqua Ammonia fumes.

-
1. has 14 years of experience in the Geon area.
 2. He charged F76 and 213 during the shift.
 3. He found the poly evacuation blower not running.
 4. Both 1 and 2 were monitored on the same day.
 5. assisted in recovering the line to replace a valve in the Vinyl header to Poly #1.

MANAGEMENT SYSTEM INVESTIGATION

1. Procedures for all operations were in place.
2. None of the above tasks required a mask.

CONCLUSION

Some of the high readings were a result of equipment not operating properly and performing out of the norm job duties.

CORRECTIVE ACTIONS

1. Complete area monitoring of Ultrafiltration Building during cleanup. -
2. Review past records for high readings during clean-up procedure.
- Diana Friesz
3. Replace bad diaphragm plate. - completed
4. Complete area monitoring of 2nd floor in Resin Reclaim Building.
- 1
5. Conduct OVA monitoring of Resin Reclaim wet hopper. -
6. Monitor LoSope Operator during various tasks. -
completed
7. Remonitor LoSope Operator. - Completed results 0.8.
8. Re-emphasize the correct procedure for opening the poly manhead.
-
9. Spike a sample badge with Aqua Ammonia fumes. - Diana Friesz
10. Investigate the poly exhaust system for proper air flow. - Ron Moore
11. Replace Poly #1 Vinyl valve. - - completed
12. Start poly exhaust blower - completed
13. Identify records so people with same last name are monitored on different days.
14. Investigate potential of speeding up turnaround time on monitoring badges.

Follow-up meeting in Engineering Conference Room on 7/8/92 at 1300. -
Diana Friesz

R. D. Moore

RDM:hh

Dist: Attendees
Central File

NGC 01385

TO	FIELD POINT OR DEPT. & BLDG. NO.	DATE YOUR LETTER
Distribution		
FROM	FIELD POINT OR DEPT. & BLDG. NO.	DATE THIS LETTER
R. D. Moore	Henry	7/22/92
SUBJECT		

BFGOODRICH - HENRY PLANT
GEON VINYL DIVISION

BOARD OF INQUIRY
VINYL MONITORING DATA ABOVE 2.2 PPM

SUMMARY AND CAUSE OF INCIDENT

On June 12, 1992, Harold Sprague, a Dispersion Charge Operator, had a 2.2 PPM vinyl monitoring data reading while performing his normal duties. A Board of Review was held on July 6, 1992 with the following persons in attendance:

Phil Donataccio	- Plant Manager
Ron Moore	- Sr. Process Engineer
Dave Giffin	- Safety Manager
Diana Friesz	- Environmental Engineer
Jim Brown	- Geon Foreman
	- Dispersion Charge Operator

NARRATIVE

stated that he performed his normal duties on June 12th. He remembered that they were cleaning a condenser, but he was not involved in this procedure. On shift, the poly manhead is opened by the Poly Cleaner. said that there was some painting completed on the Suspension side of the building.

FACTS SURROUNDING THE INCIDENT

1. No vinyl filters were opened or changed on the shift.
2. There were 7 YELLOW monitoring lights during the shift.
3. There were 3 RED monitoring lights during the shift.
4. Highest monitoring reading for the shift was 5.5 PPM.

MANAGEMENT SYSTEM INVESTIGATION

1. None of the tasks performed by Harold required a mask.
2. Proper procedures were followed.

CONCLUSION

received greater than 1 PPM while performing his normal activities.

CORRECTIVE ACTIONS

1. Evaluate the effect of tobacco smoke on the monitoring badge. - Diana Friesz
2. Complete area samples while performing condenser cleaning. - Rod Martin
3. Review other monitorings during June 12th. - Rod Martin
4. Revise Personnel Monitoring Data Sheet to include various job tasks performed during the monitoring so they can be easily identified when completed. - Rod Martin
5. Review in Safety Meetings the need to include all tasks performed on Personnel Data Sheet. - Ron Moore

Follow-up meeting in Safety Conference Room on 8/19/92.

R. D. Moore

RDM:bh

Dist: Attendees (6)
Managers
Poly Foremen (4)
Dryer Foremen (4)
Safety Dept.
Central File

NGC 01387

Distribution

FIELD POINT OR DEPT. & BLDG. NO.

DATE YOUR LETTER

FROM

FIELD POINT OR DEPT. & BLDG. NO.

DATE THIS LETTER

SUBJECT R. D. MooreHenryAugust 4, 1992**BFGOODRICH - HENRY PLANT
GEON VINYL DIVISION****BOARD OF INQUIRY**SUMMARY AND CAUSE OF INCIDENT

On July 18, 1992 the rupture disc on Poly 23 Condenser failed after the Poly was up to temperature, releasing twenty three (23) pounds of vinyl thru the Gaydos indicator. The relief valve was checked by maintenance. They reported that the R/V had not lifted during the event. A Board of Review was held on July 20, with the following persons in attendance:

Dave Giffin	- Safety Engineer
Don Humphrey	- Acting Plant Manager
Ron Moore	- Sr. Process Engineer
Ken Prather	- Lab Supervisor
Al Skutt	- Maintenance Foreman
Dan Kidd	- Sr. Environmental Engineer
Vince Stalsis	- Operations Supervisor
	- Charge Operator
	- Safety & Environmental Operator

NARRATIVE

At 15:45 on 7/18/92, started running water into Poly 23. Since the water was running slow thru the condenser, he isolated the condenser and ran the water directly into the poly. When the poly reached 85 PSI, opened the return line first, in an attempt to free the line of any chunks. He finished valving in the condenser shortly before the poly reached zero hour at 16:25. The first building light came on at 16:16. The first double light occurred at 16:40. The operator and foreman investigated reason for building lights and found the source to be at the DOP tank. An exhaust hose was used and the building lights dropped to 1.64 PPM. While was investigating he went to the roof and checked the Condenser Gaydos indicator at 17:00 he reported the Gaydos indicator was in the correct position (RED Ball was not exposed). At 18:15 a double light occurred, went to the roof again and found the RED Ball on the Gaydos indicator exposed. He immediately valved out the condenser and placed it on recovery.

REDACTED

The Following Is A Time Schedule Of Key Occurrences:

15:45	Charge Water To Poly
15:46	Operate Condenser Valve, Switch Water To Poly, Isolate Condenser
16:16	Evaluate Condenser
16:25	Open Valves To Condenser, Poly Pressure 90 lbs. Temperature 116
16:25	Zero Hour
17:00	No RED Ball On Gaydos
18:17	High Building Lights (26 PPM)
18:19	RED Ball On Gaydos
18:29	High Building Lights (119 PPM)
18:30	Pulled Vacuum On Condenser

CONCLUSION

Due to restriction in charge line, the condenser went hydroful. When the operator actuated the manual valve, it created a hydraulic condition that weakened the rupture disc. The rupture disc failed later during the reaction.

CORRECTIVE ACTIONS

1. Check inlet and outlet lines on condenser for plugs.
Completed 7/20/92
2. Verify pressure obtained during hydraulic conditions.
Completed 145 pounds
3. Write GPO to upgrade all Gaydos indicators.
Completed
4. Revise procedure to eliminate hydraulic condition - Tom Grabenstetter.
5. Stop actuating condenser valves until evaluation of procedure is completed - Tom Grabenstetter.
6. Verify procedure which requires the poly to be taken out of service based upon specific criteria - Ron Moore.

Follow-up meeting in Safety Conference on 8/26/92 at 1:00 .

R. D. Moore

RDM:lc

Distribution: Attendees
Managers
Poly Foreman
Dryer Foreman
Safety Department
Central File

NGC 01389

BFGOODRICH - HENRY PLANT
GEON DIVISION
BOARD OF INQUIRY - VCM LEAK

August 23, 1991

SUMMARY AND CAUSE OF INCIDENT

On August 19, 1991 at 11:19 hours 70 pounds of Vinyl Chloride leaked through the agitator drive shaft seal of Blowdown Tank 5 when the retaining bolt loosened, allowing the drive shaft to slip down partly through the seal past a sealing O-ring.

BOARD OF REVIEW

The following personnel were in attendance at the meeting:

Phil Donataccio	- Plant Manager	
Don Kidd	- Manager of Health and Environmental	
Bill Lindstrom	- Geon Special Projects Engineer	
* Ron Moore	- Geon General Foreman	* (chairman of B.O.R.)
Ken Prather	- Geon Technical Supervisor	
Dave Giffin	- Plant Safety Manager	
Brian Arends	- Safety Engineer	
Tom Grabenstetter	- Geon Sr. Process Engr.	(recorder of B.O.R.)
Neil This	- Geon Dryer Foreman	
Jim Brown	- Geon Polymerization Foreman	
Nobbie Lewis	- Mechanical Maintenance Foreman	
	- Geon Recovery Operator	
Rob Calder	- Senior Safety Engineer	
	- Geon Environmental/Safety Technician	
Steve Smith	- Maintenance Engineer	
Terry Castor	- Maintenance Manager	
Ray Linneman	- Geon Engineering Supervisor	

CONCLUSION

Blowdown tank 5's drive shaft retaining bolt loosened due to excessive agitator shaft vibration, which was caused by

- 1) lack of a steady bearing in the blowdown tank; and
- 2) the lock washer was not effective in preventing bolt loosening.

CORRECTIVE ACTION

1. Develop and install a drive shaft retaining mechanism to replace the retaining bolt and prevent slipping on blowdown tank drive shafts. See Drawings 1 and 2. S. Smith/N. Lewis
2. Design and install a blowdown tank level indication system that also will stop the agitator when the level drops below the agitator blades. R. Linneman
3. Replace the seal, stub shaft, and steady bearing on Blowdown Tank 5. N. Lewis

REDACTED

NGC 01390