

*Handwritten: 4-2-1998
also 6/1/98*

Gressler, John (OGC)

From: DesJardins, Robert (DPK)
Sent: Monday, June 22, 1998 8:59 AM
To: *All Employees at DPK
Cc: *DPK Narrative Report
Subject: Incident of Experience Value - VCM Sphere RD Failure

Deer Park Plant
Incident of Experience Value: VCM Sphere Rupture Disc Failure
June 13, 1998

Summary of Incident

On Saturday, June 13, at 1804 hours a rupture disc alarm was received in the control room for the N.E. sphere rupture disc. The VCM shipment was immediately shutdown, sphere recovery was initiated, and the alarm was investigated. The sphere level and pressure were 76.2 psi and 77%, respectively. There were no indications of relief valve lifting. After 90 minutes of monitoring the rupture disc alarm did not clear, and it was concluded that the disc was blown. The S.W. rupture disc and relief valve assembly was placed in service and plans were made to replace the N.E. rupture disc and relief valve. There was no release of VCM during the incident.

Board of Review

This incident was reviewed on June 15th, and again on June 17th, with the following in attendance:

Robert Brown	Shift Leader
Holly Livermore	Environmental Engineer
Byron McWhirter	Plant Manager
Bill Lindstrom	Senior Reliability Specialist
Steve Johnson	Senior Process Control Engineer
Ed McKinley	Manufacturing Manager

Corrective Actions

Initial Review:

1. Replace rupture disc (Complete) and relief valve. (Bill Lindstrom by 7/31/98)
2. Check calibration of the sphere level instrumentation. (Bill Lindstrom - Complete)
3. Check rupture disc tolerance. (Bill Lindstrom - Complete)
4. Vent sphere during the next shipment. (Robert Brown - Complete)
5. Inspect relief valve isolation valve for proper operation and evaluate a PM to stroke valves. (Bill Lindstrom - Complete)
6. Review incident with all operators emphasizing the need to fully investigate all alarm situations. (Shift Leaders by 7/15/98)

Follow-Up Review:

7. Audit all PMs for instruments which have a ProVox interface and add steps to include conversion of level to volume for proper verification at the console. (Bill Lindstrom - Complete)
8. Modify oxygen testing on sphere to include vapor pressure check and subsequent sphere venting. (Mike Netek by 7/1/98)

Narrative

On Saturday, June 13, at 1804 hours a rupture disc alarm was received in the control room for the N.E. sphere rupture disc. The VCM shipment was immediately shutdown, sphere recovery was initiated, and the alarm was investigated. The sphere level and pressure were 76.2 psi and 77%, respectively. There were no indications of relief valve lifting. Frank Burns, acting Shift Leader, notified the technical staff and Environmental Engineer.

After 90 minutes of monitoring the rupture disc alarm did not clear, and it was concluded that the disc was blown. At 71% level and 64.5 psi the alarm continued. The S.W. rupture disc and relief valve assembly was placed in service and plans were made to replace the N.E. rupture disc and relief valve. The Operators attempted to close the valve below the N.E. assembly but could not move it. They called a pipefitter who was eventually able to close the valve.

Facts Surrounding the Incident

1. The VCM temperature during shipment reached 105F. Ambient temperature was approximately 99F. VCM charge temperature was approximately 99F.
2. The level instrument on the sphere is calibrated for VCM.
3. The sphere level is procedurally limited to 80% by volume.
4. The high pressure alarm on the sphere is set at 75 psi with a second high pressure switch at 70 psi. The pressure

switch had been active since May 28th with 4 indications of high pressure on this day. All alarms were acknowledged and the high pressure was attributed to high ambient temperatures. The 75 psi alarm had not been activated prior to this incident.

5. The 6" diameter Continental rupture disc was set at 95 psi at 100F with a -5%, +0% rupture tolerance.
6. The rupture disc and relief valve were last changed in 1997 and are on a 1 and 3 year replacement schedule, respectively.
7. The sphere pressure trends indicated an unusual pressure drop each time the shipment ended. Also, sphere pressure increased at the beginning of each shipment suggesting a higher than normal level of inerts.
8. The oxygen level in the sphere is checked once per week and vented if necessary. The higher than normal levels of inerts may have originated during the LaPorte start-up in late April.
9. During the follow-up investigation, the sphere volume indication in ProVox was found to be in error by as much as 10% and may have contributed to premature rupture disc failure. A recent calibration was made, but at that time the percent level was not converted to percent volume, and the ProVox calculation error was not recognized. The ProVox calculation had not been modified since 1995.
10. Actual level at the time the rupture disc failed was 73% by level and 81% by volume after correcting for the calibration error.
11. Pressure instruments on the sphere were checked and found to be accurate.
12. The rupture disc was installed properly by Geon maintenance craftsmen.

Management Systems Investigation

1. The PMs for level calibration were completed as scheduled.

Conclusion

It was concluded that the rupture disc failed prematurely due to unknown causes.