

VCM RELEASES WHICH OCCURRED SEPT. 16, 1981
AND NOV. 5, 1981 FROM THE VCM CHARGE
FILTER IN REACTOR MODULE NO. 1

Summary:

These two releases occurred from the thermal relief valve on the north fresh VCM charge filter in reactor module No. 1. The filterpak was overpressured in both cases but the cause for the overpressuring was different. These thermal relief valves have now been tied into the batch water strippers. Since no further releases have occurred this change is believed to have solved the problem.

QUESTION 1:

FOR EACH RELIEF VALVE OR MANUAL VENT VALVE DISCHARGE OF VINYL CHLORIDE ("VC") WHICH OCCURRED FOR THE PERIOD FROM JANUARY 1, 1979 TO JANUARY 1, 1985, A DESCRIPTION OF THE NATURE AND CAUSE OF THE DISCHARGE, INCLUDING PRIMARY AND/OR RELATED CAUSE(S).

Response:

Descriptions of each of these incidents have previously been provided to the Region IV EPA in the documents which are referenced below:

September 16, 1981

1. This incident was reported in a letter to Charles R. Jeter, Region IV EPA, in a letter dated September 23, 1981, which is attached as reference E-1, Appendix E.
2. This incident was also reported to the National Response Center on September 16, 1981.

November 5, 1981

1. This incident was reported in a letter to Charles R. Jeter, Region IV EPA, dated November 13, 1981, which is attached as reference E-2, Appendix E.
2. A report was also made on this incident to the National Response Center on November 5, 1981.

QUESTION 2:

FOR EACH DISCHARGE DESCRIBED IN RESPONSE TO III.A.1., A DETAILED DESCRIPTION OF ALL RELEVANT CORRECTIVE STEPS TAKEN BEFORE AND DURING EACH DISCHARGE TO PREVENT AND/OR MINIMIZE THE RELEASE OF VC TO THE ATMOSPHERE, INCLUDING, BUT NOT LIMITED TO, SUCH STEPS AS REROUTING VC EMISSION VENTS TO A COLLECTION VESSEL OR INCINERATOR.

Response:

The relevant corrective steps which were taken before and during each discharge to prevent and/or minimize the discharge are discussed in the references provided under Question 1.

The information provided below and documented in the appropriate references is additional information relevant to corrective actions taken before, between, and after the September 16, 1981 and November 5, 1981 incidents to prevent VCM releases caused by overpressuring of the VCM filter pak.

FILTER PAK VAPOR EQUALIZATION LINE

Prior to September 16, 1981, this filter was vented to the fresh VCM receiver with a vapor equalization line. The line was designed to be open at all times that the filter was in service so that the filter could not be overpressured. The rupture disc and relief valve were provided only as a safety device to guard against the remote possibility that the equalization line could become plugged or otherwise closed off. The September 16, 1981 incident occurred when this equalization line became plugged with PVC polymer.

Subsequent to the September 16, 1981 release, the standard operating procedure was changed to include a daily check of the filter pak pressures. This item was added to the reactor "A" checklist on September 23, 1981. Equalization of the pressure between the VCM filter pak and the VCM receiver after the charge is complete indicates that the equalization line must be open. This pressure check procedure was discontinued after the relief valve discharge was piped to a containment system.

It should be noted that the equalization line was open when the November 5, 1981 release occurred. It is believed that the November 5 release occurred when the VCM charge pump ran blocked in for a short period of time. The equalization line was too small to relieve all the pressure in the system.

FILTER PAK RELIEF VALVE CONTAINMENT

A plan was developed after the September 16, 1981 release to tie the discharge of the filter pak relief valve in to the new batch water stripper which normally operate at a pressure below 10 psig. The materials necessary to make this tie-in were ordered on October 15th. Because of the time required to procure the necessary relief valves and other material required to make this tie-in, the installation had not been done when the November 5, 1981 discharge occurred.

On November 6, 1981 a temporary tie-in was made from the filter pak relief valve discharge to the recovered VCM receiver. This tie-in ensured that any future overpressuring of the filter would not result in an atmospheric VCM release from the relief valve.

The permanent blowdown system described above to contain the filter pak relief valve discharges was completed as soon as practicable after the valves and other material were received. It should be noted that this tie-in required a unit shutdown. Also because of problems that can occur during freezing weather, the plant operating philosophy is to not take planned unit shutdowns during the cold weather months. This system was operational in February of 1982. This should provide a good solution to the problem since the batch water stripper normally operates at a pressure below 10 psig. The tie-in line should also not be subject to plugging since it does not normally have a high VCM concentration. This installation is believed to have solved the problem which led to these discharges.

QUESTION 4:

FOR EACH VC DISCHARGE IDENTIFIED IN III.A.1. AS BEING CAUSED, IN WHOLE OR IN PART BY EQUIPMENT MALFUNCTION OR DEFECT, THE FOLLOWING INFORMATION:

- a) DESCRIPTION IN DETAIL OF THE CAUSE OF THE MALFUNCTION OR DEFECT WHICH RESULTED IN THE VCM DISCHARGE.
- b) DESCRIPTION OF THE APPLICABLE INSPECTION AND MAINTENANCE PROCEDURES FOR THE EQUIPMENT THAT MALFUNCTIONED AND IDENTIFICATION OF THE FREQUENCY OF INSPECTION REQUIRED BY SUCH PROCEDURE. IF THE ACTUAL INSPECTION/MAINTENANCE OF THE AFFECTED EQUIPMENT IS NOT CONSISTENT WITH THE REQUIRED PROCEDURE, DESCRIBE THE INCONSISTENCY AND EXPLAIN WHY.

Response:9/16/81 Release

There is no indication that any equipment malfunction or defect contributed to this release.

11/5/81 Release

The direct cause of this release was the overpressuring of the filter pak during VCM charge which resulted in bursting the rupture disc and lifting of the relief valve which discharged to the atmosphere. Mechanical malfunctions lead to the overpressuring of the filter pak.

Overpressuring of the filter pak is believed to have been the result of a sequence of events which was not foreseeable when the system was installed. The VCM charge was controlled by a MODICON programmable controller which was programmed to start the charge pump when the pump discharge valve was opened. In this case, the charging operation proceeded normally until charge was complete and the signal was given to close the pump discharge valve and shutdown the pump. It appears that the problem started when the pump discharge valve did not close properly. A signal would normally be provided to the programmable controller at that point indicating that the valve was closed. In this case, a closed signal from the valve was apparently not received by the programmable controller.

The programmable controller then restarted the pump since its information indicated that the valve was open. Since the other valves in the charge line were still closed, the pump started up dead headed and overpressured the filter. Overpressuring of the filter was only momentary since as soon as the pump started up the operator shut it down. Thus the conclusion is that the problem was caused by a malfunction of the valve or of the switch that indicates that the valve is closed. Immediately after the incident, additional interlocks were programmed into the controller to prevent the VCM pump from starting up if any of the valves in the pump discharge line are closed.