CHEMICALS PPG INDUSTRIES INTEROFFICE / LAKE CHARLES

TO Billy Salter

DATE November 19, 1982

FROM Mike Huber

SUBJECT Blown Rupture Disk on #2 WR Kettle

On Sunday, 11/14/82, the rupture disk on the #2 Waste Recovery kettle blew, spraying the #3 incinerator and CSS-Sodium Formate area. This write-up describes the events leading up to the blown rupture disk.

The #2 Waste Recovery still condenser had been retubed and was re-installed on 11/13. Early on 11/14, the #2 WR kettle system was started up. The #1 WR kettle system was already up and running.

(The condensate lines on the two WR still condensers tie together and drain to the WR still reflux tank. From the reflux tank, the bottoms product goes to the storage tanks. The condensers and the reflux tank have a common vent line.)

Immediately after the #2 WR kettle system was started up, wet samples showed up. This, along with problems with the DH still, led to the feed tank and all three "product tanks" in the Bottoms plant becoming wet. The situation was critical due to low Per/Tri feed inventories and the importance of Bottoms plant product in supplying much of their feedstock.

The feed tank moisture problem was quickly resolved and both kettles were started back up. It was felt that the moisture problem in the #2 WR system would quickly clear up. This did not occur, however, and the #2 WR kettle was shut down. After it was shut down, the condenser heads were pulled and the shell side was pressurized; but no leaks were found. In an effort to supply feed to Tetra and to dry up the #2 WR system, the decision was made to feed dry #1 WR system product to Tetra and to block in the #2 WR still condenser until it had dried up. Instructions were given to block in the condenser vent and condensate drain so as to not contaminate the dry material in the WR still reflux tank. A hose was to be used to vent the system. Our goal was to put a little steam on the kettle, cut the water off of the condenser so as to heat up and dry up the condenser quickly. Then put the water back on and sample the condensate for moisture content. The process of drying the condenser began around 12:00 p.m.

In actuality, two hoses were used to drain the condenser--one for the vent and one for the condensate. At around 12:30 p.m., after blocking in the #2 WR still condenser and CTW, the day operator put steam to the #2 WR kettle to begin heating up the condenser. After about 10 minutes, the condenser was hot and the kettle pressure had built up to 15 pounds. He then blocked the steam back off. (A ten-pound automatic steam trip system

exists on each WR kettle, but this did not work. It did not occur to the operator at the time that the steam should have tripped. After the rupture disk had blown, the pressure switch on the system was found to be bad.) Next, the day operator put the water back on the condenser, caught a sample and found it to be wet. He said that once the water was back on, the pressure dropped and the condenser cooled down. After discussing the situation with the shift engineer, it was decided to try the process again to dry the condenser. The day operator once again put steam on the kettle, the system began to pressurize, and the steam was cut off once again. He put water back on the condenser and the condensate sample was once again wet. Day shift ended with the #2 WR kettle system down.

Just after shift change, the operations foreman called in to see how things were going in the Bottoms plant. The evening shift lead operator relayed that moisture problems still existed in the #2 WR system. After discussing the problem, it was decided to try drying out the system once again. The unit operator then put steam and feed on the kettle and left CTW on the condenser. Two hoses were still used to drain the condensate and vent the system. Approximately an hour and a half later, the rupture disk on the #2 WR kettle blew. The area was cleared by activating the WTU unit siren and the feed and steam were immediately blocked. Within forty-five minutes, the rupture disk had been replaced by maintenance. Vacuum trucks were called to remove puddles of organics. The rupture disk emissions sprayed an area consisting of the #3 incinerator and the CSS-Sodium Formate units. Contaminated shell was removed the next day and painting of the affected units will begin as soon as possible.

An investigation of the incident determined the following:

1. The evening shift operator was not aware of pressure problems experienced by day shift while attempting to dry up the system. Therefore, pressures were not checked once feed and steam were put on the kettle.

2. The high pressure alarm and trip on the #2 WR kettle did not work. The evening shift instrument man found the pressure switch to be bad.

In conclusion, the two major causes of the blown rupture disk were:

1. Failure of the high pressure trip-alarm system.

2. Failure to stress the importance of watching the kettle pressure while in an abnormal mode of operation.

bjm

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