



Interoffice Communication

To J. W. Powell

From R. W. Seymour

Date 7/1/75

Subject POWER FAILURE OF 6/20/75: VCM EMERGENCY

On June 20, 1975, at approximately 8:42 a.m., the plant experienced a failure of electrical power which lasted for approximately one hour and ten minutes. All Vinyl Department Supervisors were in a Supervisor's Meeting in the Front Conference Room when we lost power and we immediately went to the Large Reactor & Dryer Areas. J. W. Powell, Plant Superintendent, F. M. Willson, Safety Director, C. O. Tubb, J. G. Roberts from the Safety Department, D. E. Michels, Chief Process Engineer and J. E. Barton, Process Engineer also reported to the Large Reactor Area soon after the failure. Reactor conditions were as follows:

- D-300: Had been on recovery and pressure had been reduced to 50 psig.
- D-400: Approximately two hours in cycle on 5385 resin.
- D-500: At peak reaction rate with temperature beginning to rise - 5446 resin.
- D-600: Approximately four hours in cycle on 5446 resin.

Emergency systems were all functioning properly in the Control Room, at this point, except that we had no pressure and temperature indication on D-500 & 600.

- A. It was decided, at this time, not to evacuate the area due to wind direction (from the N.E.) and the possibility of preventing the venting of most of the VCM contained in the reactors.
- B. Reactor Operator, Kenneth Bishop and Reactor Shift Supervisor, Bobby Hawkins went immediately to the top of D-500 to watch the reactor pressure, since the temperature had begun to rise before loss of power. The reactor pressure rose rapidly, with no agitation or cooling. Through radio communication, Harold Sanders, Panel Operator, was informed of the high pressure. He opened the manual vent valve on D-500 to reduce the reactor pressure and prevent bursting the safety discs. This allows the reactor to vent VCM through a stack on the V-11 roof. This release began at approximately 8:50 a.m. At the same time, Don Johnson, Operations Supervisor and L. Munn, Reactor Operator, injected AMS into D-500 in order to try to short-stop the reaction. Don Johnson was splashed on the chest with some AMS during this operation and later got First Aid treatment.

DTH 000083055

At this point, both D-400 and D-600 temperature and pressure were rising rapidly. It was decided to equalize D-400 with D-300 to help reduce the pressure. Also, at this time, D-500 began venting slurry. Harold Sanders tried to operate the proper valves to:

1. Stop D-500 manual venting.
2. Equalize D-400 with D-300 to prevent bursting the D-400 safety discs. The necessary valves would not operate from the panel. Kenneth Bishop attempted to override the valves at the reactors. These also would not operate. It was at this point that we realized that our nitrogen back-up system for air had failed.

The nitrogen back-up system has a bank of nitrogen bottles on a regulator with a control valve so that when plant air drops below the set point (40 psig), the nitrogen control valve opens and allows the bottles to pressurize the system. There is a check valve and a manual valve in the air supply line to the Large Reactors. Bobby Hawkins had closed the manual valve so that check valve leakage would not allow us to lose the nitrogen back into the air line. J. W. Powell, Bobby Harrison, Reactor Supervisor, C. O. Tubb, D. F. Johnson and Jesse Moore, Reactor Supervisor, began checking the bottle system to get nitrogen into the system.

R. D. Gamblin, Plant Manager, and William Browning and Eugene Bishop from the Electrical Maintenance group entered the Large Reactor Motor Control Center at this time to get breakers shut off in order to prevent ignition when power was restored.

Kenneth Bishop, R. W. Seymour and Harold Sanders were watching conditions on D-400 and D-600. At approximately 9:07 a.m., D-400 burst both safety discs and began venting to the atmosphere. All personnel present then concentrated on the nitrogen system to get pressure enough to operate valves and keep D-600 from blowing its discs.

Dryer Supervisors had assembled their personnel at their primary assembly location, the Dryer Control Room. They also sent word to personnel working in V-12 to evacuate. Shortly after D-400 vented, Alton Reeves, Acting Operations Supervisor, directed all dryer personnel to go to their assembly location, the pad North of V-10.

D-600 burst its safety discs at approximately 9:17 a.m. At this time, all personnel were directed to evacuate the area since further work could not reduce the VCM release.

All reactor personnel and Supervision moved to the V-10 silo area. Bobby Hawkins and Don Johnson returned to the area to manually set off the deluge system. When the VCM release was complete, Dave Cox and Jerald Uptain re-entered the area to check for VCM with a Century OVA Unit before other personnel re-entered the area. Safety Department Personnel also monitored the plant boundary VCM levels. Electrical Maintenance Personnel completed shutdown of breakers in the Motor Control Center at this time.

A reading of 30 ppm was registered initially in the area where the slurry was on the ground outside the Control Room. This quickly dropped to 10 ppm and personnel re-entered the area to begin cleaning up the area and getting equipment ready for the return of electrical power.

Electrical service was returned at approximately 9:50 a.m., but failed again for forty five minutes at approximately 12:00 p.m.

The following items were completed before reactor start-up:

1. The nitrogen back-up system was revised with a 3/8" supply in place of the 1/8". Apparently a plug in the 1/8" line prevented much nitrogen from getting into the air line. This system was tested before start-up and it will operate the valves. The old system had not been used since the last two reactors were installed.
2. D-500 & D-600 instruments were found to have had a relay failure which would not allow proper switching to battery power. This was repaired and tested.
3. All safety discs were charged on D-400, D-500 & D-600 and the reactors were pressure tested.
4. We received word from the power company that they were confident we would not have another power outage.
5. The new cooling tower was pumped out to remove resin.

Charging resumed at approximately 6:00 p.m. on 6/20/75.

No personnel wore any breathing protection for VCM exposure during the incident. The Honeywell Area Monitors do not have back-up power, so we have no area readings during the incident. There was a gas bag running in the Control Room during the venting. The reading was 3.2 ppm with Control Room exposure estimated at 10 ppm. (Bag was out of the area part of the morning). The four Bacharach deluge system monitors are battery powered during power failure and did not set off the deluge, so readings in the recovery and D-300/400 area were below 20,000 ppm. The D-500/600 monitors are not on the battery back-up power system. Estimated personnel exposures are in F. M. Willson's report.

OTHER ACTION ITEMS:

1. Century OVA Units were not serviceable during the failure. Readings each shift were stopped when sphere construction fire watch personnel began using the units. We have started taking readings again each shift in the Reactor & Dryer Departments and the units will be kept in working order as much as possible.

DTH 000083057

2. A W/O has been written to wire the D-500/600 deluge monitors on the battery back-up power system. Target date is 7/15/75.
3. A W/O has been written to install permanently mounted, above ground handles for the water monitor nozzles. Target date is 7/3/75.
4. A W/O has been written to install short-stop bomb systems on the agitator seal water flush lines on each reactor for faster short-stop injection for emergencies. Target date is 8/1/75.
5. F. M. Willson is to initiate action to put the four Honeywell Units on back-up power of some type including bottled air.
6. A once a week test of the Large Reactor Emergency Systems will be performed. Target date is 7/15/75.
7. Three more Scott Air Paks will be mounted outside the Large Reactor Control Room. Target date is 7/1/75.
8. The VCM Emergency Plan is being revised.

The loss of VCM and PVC during this incident was approximately 86 M #'s. The batch in D-300 was never vented and incurred no loss. The D-500 batch was nearly complete and the remaining resin met specifications. The D-400 (5385) and D-600 (5446) batches were mixed and bagged as 5406 (nearest specific viscosity) off grade and yielded 17,950 pounds.

Estimated possible production not made due to the failure is 220 M #'s.

R. W. Seymour
R. W. Seymour
Vinyl Operations Superintendent

lpb

C: LHB
RDG
DFJ
FMW
KWC

DTH 000083058