

## Byron Pre-release Inspection Results

### Data Collected

The data tables for all wells samples were sent in an earlier email to the Region and HQ. A consolidated data table compiled by Conestoga-Rovers has not been received by us. The licensee expects to have it ready by Wednesday (04/19/06).

### Historical Leak/Repair for Vacuum Breakers

The licensee indicated that vacuum breakers were found leaking as earliest as 1999. However, only instances since 2001 were well documented. Three vacuum breaker leaks since 2001 were associated with the air relief valves of Vacuum Breaker #2, #4 and #5. The leaks were not quantified at the time so leakage data was not available. The three air relief valves were eventually fixed in March 2006.

During the annual inspection last July at Vacuum Breaker #6, the licensee identified that the vault was full of water. However, they were not able to identify the source of the water because it was not active. The condition appeared to be intermittent as they only identified water occasionally. They decided to replace the whole vacuum breaker and this work is scheduled to start in August 2006.

The licensee engineer has also submitted a PM request to have the air relief valves replaced every five years and the vacuum breaker replaced every ten years. The licensee is looking at the feasibility of having the other two air relief valves (VB #1 and VB #3) replaced at the maintenance window in August. There is currently no plan to replace other vacuum breakers.

### Weekly Inspection

The licensee has a chemistry surveillance that they perform biweekly to inspect all six vacuum breaker vaults and to sample the water if present. This procedure also has provision to measure the amount of water in the vault and to have the water pumped out by maintenance. Operations also has a biweekly task to inspect all six vacuum breaker vaults for active leak or standing water. However, the only action required is to notify the shift manager if water is present. The shift manager will then determine the course of action. However, no guidance is given by the inspection procedure.

These two inspections are being performed in an alternate basis so the vaults will be inspected once a week.

### Seal-coating

Seal-coating for all six vacuum breaker vaults were completed last Friday (4/14/06). A layer of water sealer was first applied and then two layers of epoxy material were installed. The vendor performed some sort of conductivity test at the end to verify the thickness of the coating. The data for the test was requested but the licensee has not provided that to us yet. The plant operation review committee (PORC) for the release has also asked for a third party review of the validity of the test.

I have inspected all six vacuum breakers on Tuesday afternoon (4/18/06). Before the inspection, the licensee had pumped out approximately eight gallons of water from Vacuum

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Breaker vault #1, #4 and #6, total. Since there were heavy rainfalls over the weekend and the cover is not leak tight, the water collected inside the vaults could be rain water. They decided later that they would sample the water. However, since they mixed the water from the vaults together, it was unclear if the result would be meaningful.

There were small puddles of water at the bottom of the vaults but there were no active leaks. All the walls were dry to touch and there was no sign of water coming into the vaults thru the metal cover. For each vault, the bottom of the vault and the two concrete wall sections were caulked before the seal-coating were applied. The epoxy material covered the bottom of the vaults completely and the drains that were there before were also covered and had disappeared.

The vendor also put the epoxy sealant around the bottom of the vacuum breakers and the metal bars (acts as the vertical ladder for the vault) that extends out from the side of the walls to seal off any gap between the two surfaces. The sealant was applied to the top of the vaults. A small gap exists between the ceiling and the side of the vacuum breaker wall.

Since the vault is made of concrete, there are normally some air pockets visible on the wall. It looked as if there were small "pits" on the surface. When the seal-coating was applied, it appeared that the vendor tried to cover/seal all these pits with the epoxy materials. Most of the pits were completely covered by epoxy, which is gray in color. Other pits were covered by the water sealant as indicated by their "wet" appearance. However, some pits were not covered by anything. It looks like they are bare concrete pits. I could not determine whether water could pass through those pits. The location of the pits appears to be random. On average, there is about one pit per square yard that is questionable whether it is water tight. I will upload some pictures to the S:/ Drive in the morning.

The licensee did not perform any test on the vacuum breakers after the seal-coating but only a few droplets of epoxy materials were found on each vacuum breaker. Since the droplets are not on any moving parts and they do not block any openings, it is not likely that the vacuum breaker operation is affected.

The licensee is in the process of installing a sealed manhole cover for the vaults. The new cover is made of aluminium and has a rubber gasket to prevent water intrusion from the outside (ie. No rain water can get into the vault). Only VB# 5 has the new cover.

#### Sampling for Deep Well Near VB #4

The licensee performed the sampling onsite and the sample showed less than detectable on their equipment (<1900pCi/L). They are currently in the process of conditioning the well and another sample will be drawn on Thursday this week (4/20/06) for offsite testing. The licensee understands that the sample result would not be available before they resume release and they do not see that as a constraint. They believe that the sample is only used for site characterization and verification of stratification.

#### Bases for Pipe Integrity

The licensee essentially restated what they had indicated on OTDM 2006-07. Basically, the carbon steel coupons and the ultrasonic testing of the non-buried section of the pipe showed that there were no significant thinnings of the pipe from the inside.

The blowdown piping was coated on the outside by some type of epoxy tar materials. The cathodic protection system would also protect the pipe from corrosion. A 2005 test showed that the system was functional properly and a 2001 test showed that the system protected the full length of the blowdown line. Therefore, corrosion from the outside should be minimal.

The licensee also stated they had a weekly soil erosion surveillance to look for water collected along the blowdown line. I requested a copy of the surveillance but I have not received it yet.

In addition, the licensee did not find any water from the shallow wells. Based on the input from their geologist/hydrologist, the data is consistent with the contour map and that the piping is intact. In other words, if there were any continuous leak from a leaking pipe, the shallow wells would identify water. There are also no other documented leaks.

An action to evaluate the testing required to ensure piping integrity is due on June 30, 2006. No date has been set for actual testing.

#### Stop Work Criteria

For the first release, the licensee will stage operators at each vacuum breaker and look for leak. They intend to cover the stop work criteria at the pre-job brief. They did not have the briefing material ready but I requested a copy. They indicated to me that it would be acceptable if water was not streaming (more than ~200 drops/min) out of the breaker. Operators would notify control room to secure the release if there were excessive water coming out of the vacuum breaker. They estimated that it would take approximately five minutes to secure the release - one valve has to be closed at the radwaste panel. There are also two automatic interlocks that would secure liquid release. They are blowdown flow and release tank discharge radiation level. The interlock for the release tank discharge radiation level would be checked prior to release. The setpoints of the interlocks vary and are dependent on the release radiation concentration.

#### Sampling After Release

The licensee is looking at sampling the onsite wells as well as some of the EPA superfund wells in the coming months. Their intention is to sample once a month at the beginning and to change the frequency to quarterly if everything looks good. They are going to give us a more detailed plan Wednesday (4/19/06).