

November 15, 2005

Poor Fabrication of Stop Log Caused Fly Ash Leak, PPL Investigation Finds

An in-depth evaluation by a PPL team conducting a root-cause analysis of the fly ash leak from Basin #4 at the Martins Creek power plant has determined that faulty fabrication of a wooden stop log led to its failure 16 years after it was installed.

The stop logs that held back water and ash in the basin were cut improperly, the team said in its report, which was released Nov. 15.

For the stop logs to stack properly, each log had to have notches cut in the wood to accommodate the lifting lugs in the log underneath it. Unfortunately, the cuts in the stop logs – and in particular the one that failed – were deeper than specified. The im-

proper cut created a structural weakness in the stop log that failed Aug. 23.

The investigating team, which included experienced PPL employees with backgrounds in power plant engineering and operations, environmental management, nuclear operations and internal auditing, was assisted by an outside expert in failure analysis in determining the cause.

The team also found that some notifications about the incident, both internally and externally, did not meet PPL's standards and that personnel inside the company had not anticipated the possibility of a failure of this sort at the basin.

The team's report is available on the



The wooden stop logs have been replaced by these steel-reinforced concrete logs.

Internet at www.martinscreekcleanup.com. Copies of the report also are available at the Lower Mount Bethel Township and Harmony Township buildings.

From the Cleanup Director



The report from PPL's team clearly shows that this incident was inconsistent with PPL's high operational standards. We're already pursuing many of its recommendations. Basin #4 has been upgraded – the stop logs have been replaced and steel plates and valves have been added to the discharge system. One other ash basin at a different company facility that has a similar design already has been modified to prevent an uncontrolled release.

We are sharing the report with the public to demonstrate our commitment to doing the right thing and to living up to our obligations. We are committed to re-earning your trust and confidence.

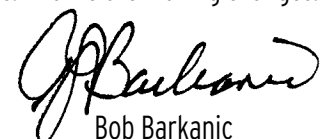
The investigating team was made up of people who were not directly connected with the design, building or operation of Basin #4. The team took a hard look at why the stop log defects were not detected and why a single stop log failure

resulted in this major event. Their analysis considered how several factors may have contributed, including:

- Design of the stop logs and discharge structure.
- Quality inspection and construction oversight.
- Periodic dam inspections.
- Operation and maintenance of the basin.
- Emergency response.
- Repair procedures.

The team also found that PPL personnel had not anticipated the potential for this event. In industry use, treated wooden stop logs had a service life of as much as 60 years. With the basin expected to be actively used for less than half that time, a failure was not expected. This fact influenced the original design, the periodic inspections, maintenance and, eventually, the emergency response to the failure.

Improvement only comes when we face up to the need to change. We've learned from this event. We are taking seriously the team's recommendations. And we are making changes.


Bob Barkanic

Root-Cause Analysis Team Recommendations

PPL's root-cause analysis team for the ash spill made 10 recommendations:

- Review the design and operation of all of the company's other ash basins and impoundments and assess the need for additional discharge structure barriers.
- Review all the other facilities and systems to identify those with the potential to have a significant adverse environmental impact. For critical facilities and systems, examine "what if" scenarios to identify potential design and/or operational weaknesses that could cause significant environmental events.
- Review the Emergency Response plans at each PPL facility.
- Review internal notification and communications requirements that are not specifically part of the emergency response plans and consolidate to help ensure consistency and clarity.
- Develop guidelines for the future use of stop logs. These guidelines should consider the use of alternative materials. Provisions should be

included in the design to facilitate removal of the stop logs for inspection and replacement as necessary.

- Review existing procedures for construction oversight and quality control to ensure the appropriate level of review and oversight is exercised.
- Review the company's significant event analysis process to ensure unusual internal and external events are documented, evaluated and have appropriate corrective action taken, and that the results are communicated and addressed appropriately throughout the organization.
- Review the company's dam surveillance and inspection procedures to ensure they contain appropriate inspection criteria, and that they adequately document observations and required maintenance.



Ash Basin #4.

- Review the company's design and engineering process to ensure that designs are based on appropriate standards, receive appropriate review and are adequately documented, and that design documents are retained appropriately.
- Review operating plans for each of PPL's ash basins to ensure that the plans contain appropriate guidelines for the operation of the basin to ensure operation is consistent with the basin's design.

Normandeau Associates' Biological Assessment of River Shows No Short-term Effects

There were no detectable short-term impacts to the Delaware River fish community composition or integrity in locations exposed to the fly ash slurry, Normandeau Associates of Drumore, Pa., a firm with nationwide experience in assessing river habitats, concluded from its biological assessment.

The firm's report also notes that there

were no detectable short-term impacts on the benthic macroinvertebrate community on the river bottom. These organisms, which include mussels, snails and the immature forms of aquatic insects such as stonefly and mayfly nymphs, are a key part of the river's biology.

Normandeau will continue its assessment. In addition, the Academy of

Natural Sciences in Philadelphia will continue with its oversight of this long-term assessment.

The report is posted on PPL's Web site, www.martinscreekcleanup.com. Full details also will be included in the next issue of this newsletter.

From the desk of Bob Barkanic, cleanup director.
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