

PROMPT INVESTIGATION REPORT

- 1. **IR Number:** 465719
- 2. **IR Title:** Braidwood Prompt Investigation of the loss of water from FRAC farm berm area number one
- 3. **Chairperson and Team Members:**
 Chairpersons: Patrick Daly, Rick Leasure
 Team Member: Jim Smit
 Team Member: Craig Sprainhower
- 3. **Event Date:** 03/13/06
- 4. **Event Time:** 1145
- 5. **Summary of the Event:**

On 03/13/06 at approximately 1145 a field supervisor in operations reported to radiation protection that the south side of the berm wall that surrounds the frac tanks just north of the turbine building was down resulting in water escaping from the FRAC tank area. RP and MMD immediately responded to the area. The south wall of the berm was placed in the upright position and reinforced with sand bags on both the interior and exterior side of the berm wall. MMD, on third shift, performed a follow up inspection of the berm walls and made further adjustments to the robustness of the walls.

Two areas outside of the berm were identified as possible areas where water had overflowed. These areas were sampled and the water was pumped back into the berm area. Samples from outside the berm taken in parallel path showed tritium levels of 183,000 Pico Curies per liter (PCI/L).

The consequences of this event were not immediately significant as the water was captured shortly after identification of the leak. Soil samples were taken to characterize the extent of the spill. In addition sample wells will be installed to monitor any migration. It is not expected that the water would leave site as a result of this spill.

6. **Time Line (Pertinent Dates and Times):**

On 03/13/06 at approximately 1000 an Operations Field Supervisor performed a visual inspection on the FRAC tank area. He noted no degraded conditions.

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On 03/13/06 at approximately 1015 the Radwaste Coordinator performed a visual inspection on the FRAC tank area. He noticed that the traffic barrier suspending the transfer hose above the berm was knocked down and the transfer hose was lying across the berm wall. This was caused by high winds experienced during inclement weather. He notified the RP Supervisor that the hose was down and there was no leakage from the hose or the berm. The RP Supervisor directed the Radwaste Coordinator to notify maintenance to place the hose back on the traffic barrier off of the berm wall. The hose was not replaced on the traffic barrier prior to the event.

On 03/13/06 at approximately 1145 the Operations Field Supervisor reported to Radiation Protection the south side of the berm wall that surrounds the FRAC tanks was down and allowing water to escape from the FRAC tank area. RP and MMD responded to the area. The south wall of the berm was immediately placed in the upright position and reinforced with sand bags on both the interior and exterior side of the berm wall. Water samples were pulled from the two areas of surface water identified as possible over flow areas from the berm failing. An estimate of water that leaked from the berm was performed and the result was 280 gallons. Based on flow capacity of the pumps it is estimated that 240 gallons of water was pumped back into the berm. The water sample results were 183,000 PC/L.

On 3/13/06 at approximately 1730 the pump down of the puddles to the berm area was complete. In addition absorbent material was used to dry the puddles on the ground. An additional 4 gallons of water was captured. MMD performed follow up inspection of the berm walls and made adjustments to the robustness of the walls. RP performed a follow up inspection of the berm walls, and found them to be satisfactory.

On 3/13/06, shift 3 follow up water and soil samples were pulled within a 300' radius of the FRAC farm. All standing water areas within the 300' radius have been sampled, there were 13 samples obtained including two samples pulled in the north run off ditch by the site boundary area.

7. Equipment Damaged and/or Personnel Injured:

No personnel were injured during this event. The berm wall failure did not result in any permanent damage to the berm.

8. Pertinent Information (subsequent to the event):

An EC 358725 was performed to assess the berm for placement of 13 FRAC tanks into this area. The EC addressed the height of the berm wall and the ability to handle a rupture of one FRAC tank. As a precaution, Operations is performing a daily walk down of the berm area once per 12 hour shift as part of their routine activities. This walk down includes:

"Checking the general area of the FRAC tanks for any leakage or other concerns. Max water depth in berm is 4 inches. Inform Ops Supervisor of any noted discrepancies."

Water samples pulled in the north run off ditch were analyzed by Chemistry and indicated <1670 pCi/L tritium which is the Lower Level of Detectability (LLD) for onsite capabilities. In addition to the water samples, a soil sample was pulled in the area where the water had accumulated from the berm leakage. The samples have come back as having only naturally occurring isotopes. All samples are being sent to an off site vendor for tritium analysis, the vendors LLD is less than 200 pCi/l.

9. Conflicts or Problems (which may have contributed to the event):

During the original construction of this berm the vendor diagram was followed. The installation instructions did not specify how many sandbags were required for use to reinforce the walls. The project team followed the picture diagram and placed the sand bags approximately 10' apart. There were additional sandbags available but they were not used.

On Friday 3/10/06 the RPM requested that the RP Supervisor get the standing water in the FRAC tank berm area pumped out. A sample of the berm water was performed and the results showed >LLD so it had to be pumped into the FRAC tanks. The RP supervisor realized that the activity was >LLD when he reviewed the isotopic analysis on Saturday 03/11/2006. The RP Supervisor did not pump out the berm as instructed.

During a PORC review, the PORC committee approved the ability to let rainwater build up in the berm area to the 4" level before taking corrective measures. There were no limits placed on activity in the berm area. This increased the chance of water escaping from the berm area and spreading to the ground. Allowing rainwater build up masks the ability to identify tank leaks.

10. For Equipment Events, document the following:

- What specific component failed?

Berm wall barrier failed to withstand high wind and rain from previous nights storm.

- When was the component last worked on?

Work was not performed on the actual berm area but a FRAC tank transfer was performed on 03/11/06.

- What work was performed?

Work was not performed on the actual berm area but a FRAC tank transfer was performed on 03/11/06.

- Are the PCM template recommendations being followed?

Not Applicable.

11. Review of plant response versus simulator modeling:

Not Applicable.

12. Extent of Condition Review:

Perform an inspection of the number two FRAC farm for any possible leakage of the berm walls. FRAC tank farm #2 was identified as having water in the berm as well as the berm wall being degraded. The walls were reinforced with sand bags. There was no water identified outside the berm.

13. Recommendations for Follow Up:

- Increased frequency of inspections of the berm area by operations from shiftly to every four hours due this event
- Revise the trouble-shooting plan to address the elimination of water build up in the berm area
- Perform a root cause investigation to identify additional failed barriers and corrective actions to prevent reoccurrence
- Address long term monitoring and remediation

14. Immediate Actions Taken (including regulatory notifications):

- MMD performed maintenance to the berm walls, more robust barriers are in place to support the berm walls
- Samples pulled within a 300' radius of FRAC tank farm number one
- Water was pumped from the ground puddles back into the berm area. Then the ground was dried with absorbent material

15. The Suspected or Apparent Cause:

The apparent cause of this event is the failure of the berm wall unit to withstand the high winds and rains from the inclement weather that the station experienced.

In addition, the inaccurate risk perception of the PORC committee that approved the build up of rainwater in the berm area. This issue may have

been mitigated by having a requirement in place to remove all water in the berm upon identification.

16. Actions to Prevent Recurrence:

- Tritium team to make recommended changes to the trouble-shooting plan and communicate those changes to station personnel
- Operations to perform walk downs of berm areas every 4 hours, and report any deviations to RP
- Engineering to address possible enhancements to berm structure that would increase it's robustness
- Keep the berm area free of water with the exception of active precipitation
- Perform a thorough walk down of material condition of temporary equipment.

17. Copies of Written Statements from Personnel Involved (if applicable):

None.