Critical Analysis Team Report #41

31 August 2004

This report serves as a follow-up to CAT Report #40 in which the CAT documented its Reliability, Availability and Maintainability findings for the Silo 1 and 2 remediation facility.

During the first review, portions of the facility were not completed. In early August, the CAT revisited the facility to review portions of the facility that have been completed since CAT Report #40. The construction in the mixer rooms is nearly complete although errors still exist in equipment and line identification. The fill rooms and loadout areas are under construction and equipment checkout.

As was noted in CAT Report #40, the CAT has identified no 'showstoppers' to successful startup and operation of the Silos 1 and 2 remediation facility. It is important to note, however, that the most complex operational systems in the facility (the fill rooms and associated equipment) remain under construction.

General Comments

1. Prior to startup, Fluor should clearly define safe shutdown conditions for the Silos waste treatment facilities in the event direction is received to cease operations and shipping.

2. Given the current uncertainties surrounding disposal of treated Silos waste, the CAT recommends EPA and DOE establish dates for initiating treatment operations and shipment of the Silo 1 and 2 waste to expedite implementation of the ROD.

3. While the fill rooms are not complete, the CAT was able to observe ongoing testing of the equipment. In general, it appears the gantry manipulators for removing, replacing and riveting container lids will require significant additional work prior to operation. The crew (currently six vendor FTEs) is working diligently to overcome many operational issues. In addition, it appears the gantry manipulator and related control system may require specialized vendor assistance during operations given its sensitivity to operational variations (e.g. consistency of the waste container lid handles).

4. The CAT does not see a need for additional RAM review. However, Integrated Silos 1 and 2 Systems Operability Tests and/or cold testing provide the next logical opportunity for the CAT to observe and review facility progress.

Specific Comments

1. The mixer rooms contain several areas that should be corrected by walkdowns. Examples include:
    - Sheet N0112: Either FLX-17-1029 or AOV-44-1004 is labeled incorrectly. Similarly, either FLX-17-1030 or AOV-44-1006 are labeled incorrectly. The CAT could not determine which label was incorrect because the corresponding lines were not labeled (lines CFD-441311-14"-121 and CFD-441303-14"-121).
    - Multiple tags on top of the mixers cannot be read from the floor. Several are pointed toward the ceiling (e.g. Sheet N0112, PSV-MXB-17-1000C-2).
    - Sheet N0112: CS-152500-1"-108 is labeled incorrectly as CS-152500-04-1".
    - Sheet N0112: FLX-17-1033 is incorrectly labeled with a paper tag as FLX-17-1026.
    - Sheet N0112: The following lines were not labeled: VE-191210-6"-893, CFD-441303-14"-121, CFD-441311-14"-121.
    - Sheet N0112: HOV-17-1110 is labeled twice, as HOV-17-1110 and HOV-17-1109.
    - Sheet N0112: FE-PMP-62-1001A/B-9 is labeled as FE-FQIT-PMP-62-1001A/B-7. Also, why is this flow element labeled as a PMP?
    - Of 77 currently open activities on the Silos 1 and 2 28 July 2004 schedule, 48 are behind schedule.
    - Sheet N0110: One end of FLX-17-1018 is not connected (this is typical of at least two flex hoses in each mixer room).
    - The shaft guards on the gearboxes on mixer lines B and C are not in place.
    - Sheet N0110, N0111, and N0112: Tags MTR-55-1000A, B, C are located on their respective gearboxes. These tags should be removed as they are not identifying motors nor are they identifying system 55.
    - Air inlets and exits in the mixer rooms are all approximately 17 feet off the floor. This will not lead to adequate air sweep or cooling of the room. The project should consider installing a baffle on the supply inlet air duct to improve air sweep of the room.

2. Sheet N0127: FIT-PMP-15-1004A and 1004B are not labeled. The tag for FIT-PMP-15-1004C is misplaced on the pump discharge flange.

3. While the CAT acknowledges it would be laborious at this stage of the project, consideration should be given to equipment identification tags being color-coded to mirror the line identification tags (e.g. blue for air, green for water, yellow for process).

4. Sheet N0135: HS-BIA-44-1001C-1 is actually a switch box (not a hand switch as indicated by the P&ID) and is not labeled in the field.

5. Sheet N0135: BIA-44-1000C is not labeled.

6. Sheet N0134: The air purges in the cement and fly ash addition room are not connected (e.g. between CFD-441301-2"-121 and CA-403012-.75"-126). The tags all faced the wall and, as a result, could not be read.

7. The laboratory room appears to have been designed poorly. For example:
   - The HVAC air enters near the ceiling and exits near the ceiling. The project should consider installing a baffle in front of each inlet air duct.
   - The lab room does not include provisions for spills, leaks or prevention of contamination spread.
   - The lab room does not include safety showers or eyewashes.
   - The lab room does not include water drops other than those serving the two sinks.
   - The lab room includes a large compressor which will likely create noise issues in the lab. The project should consider constructing sound-absorbing walls to isolate this compressor from the lab to reduce noise and prevent contamination spread in the event of an incident.