

## Critical Analysis Team Report #34

5 April 2003

In March, the Critical Analysis Team (CAT) reviewed several Silos 1 and 2 documents, received overall Silos project updates and attended the Fernald Citizens Advisory Board meeting.

### Silos 1 and 2

The CAT's disappointment in receiving Silos 1 and 2 documents for review much later than expected is documented below. In conjunction with Fluor Fernald and DOE, the CAT has developed a remedy to prevent future occurrences. The CAT, Fluor Fernald and DOE Fernald will hold conference calls twice monthly to status the CAT's schedule and the availability of silos project information.

This simple action is designed to meet three goals: (1) ensure ongoing communication between the CAT and Fernald as project plans and documents evolve; (2) ensure the CAT has sufficient access to project documentation and personnel to complete its mission; and, (3) ensure that CAT recommendations are being understood and taken into account within the silos decision-making process.

The CAT was disappointed in the timing of the Silos 1 and 2 review documentation. The CAT had expected the documentation several months earlier, but didn't receive it until March 12<sup>th</sup>, 2003. Further, the documents were essentially finished when the CAT received them—(Rev 0 copies released for fabrication and construction drawings were issued for construction 10 February 2003; Container Transfer Car specification was approved August 2002; and the Gantry Manipulator and Fill Chute specifications were approved in December 2002). The CAT's specific comments on the documents are attached.

Receiving these documents at such a late date limits the opportunity for the CAT's comments to be incorporated (or considered) into the design. In responding to these comments, the CAT expects the Silos 1 and 2 project to take this timing issue into account. For example, the CAT does not intend to create unnecessary design change notices or impose an increased scope of work for the project. DOE and Fluor Fernald should review these comments with a focus toward incorporating only those comments DOE and Fluor Fernald determine are prudent to incorporate at this stage of the project.

The CAT is encouraged by Silos 1 and 2 priority on mock-up and testing of equipment and systems in its facility. These tests are important in determining viability of the equipment and systems as well as providing data to support optimizing the facility's capabilities.

### Silos Project Design Review Process

The CAT's design comments attached to this report focus on the Silos 1 and 2 project. However, the design review efforts across the silos projects are critically important in ensuring an adequate project design basis and, ultimately, an operable and maintainable facility. Without a structured and thorough review process focused on constructability, operability, maintainability and reliability, the risks of encountering significant difficulties during construction, installation, startup and operations are increased.

Three of the CAT's findings indicate thorough design reviews are not occurring in the silos project: (1) the Accelerated Waste Retrieval (AWR) project is issuing many design change notices and change notices during construction; (2) the tracking and closing/resolving of design comments does not appear to be occurring in a systematic or timely fashion; and (3) design documents contain many errors, indicating inadequate intersquad and intrasquad checking.

To mitigate these risks, the project should implement a more structured and thorough review process, focused particularly on constructability, operability, maintainability, and reliability; and perform extensive mock-up testing of appropriate process systems and equipment. Attempting to regain project schedule via abbreviated design review processes will ultimately result in negative project impacts.

### **Silo 3**

The CAT has previously commented on the need for a clearer understanding of Silo 3 waste characteristics. Of primary concern was particle size distribution and the possibility of water absorption leading to equipment plugging. In response, the Silo 3 project produced a white paper (Rhodus and Luken, March 2, 2003, M:SP:2003-0020) addressing this issue: this report is one of the highest quality technical documents the CAT has reviewed at Fernald and commends the authors.

### **Accelerated Waste Retrieval**

This project continues to struggle to complete the Radon Control System construction (Design Change Notices and punch list findings), evaluate the recent RCS hot test, and prepare the RCS for an extended hot operation. As a result of these continuing efforts, the project is experiencing significant cost and schedule overruns. The CAT received a copy of the RCS start up lessons learned report. The report identifies the root causes of the problems being experienced as precisely those identified by the CAT over the past two to three years: inadequate design reviews, insufficient document control, inadequate change control, overly aggressive schedules and inadequate staffing.

The CAT received a copy of the RCS start-up lessons learned report which addresses several root cause issues. These lessons learned should now be uniformly implemented across the silos project.

## Future CAT Activities

The past several months the CAT has been focusing its efforts on reviewing design documents. The CAT anticipates future activities will place less emphasis on design reviews and more emphasis on testing, mock-ups, start-up preparation and project change control activities. This change in emphasis reflects the silos project transition from design to procurement, construction, testing and turnover activities.

To support this focus, the CAT will be witnessing and evaluating mock-up and testing activities and reviewing monthly lists of Document Change Notices and Change Notices/Proposals to identify issues that could impact the projects. The CAT will then flag, identify and define these issues and recommend and track corrective actions. Several near-term activities include:

- Review the design and mock-up testing plan of the Silo 3 product packaging station (to be submitted to the CAT by the end of March 2003).
- Review Silo 3 vacuum wand vendor design, mock-up plan and observe testing (TBD)
- Review/status Silo 3 safety basis documentation (NHASP and related appendices) (May, 2003).
- Reviews and evaluations of monthly listings of Design Change Notice and Change Notice/Proposals for identification of issues of interest.
- Attendance at the Silos 1 and 2 Integrated fill room test (week of July 22<sup>nd</sup>, 2003; originally scheduled for April 17<sup>th</sup> through May 21<sup>st</sup>).
- RCS test plan and results of two week test (May).
- Rev 0 Riser design review (by the end of March).
- Results of Silo 4 entry test.