

Critical Analysis Team Report on General Silos Issues

CAT Report #17

1 November 2000

Silos Project Management

The CAT is concerned with the status of silos project technical and management resources. Currently, the silos project does not appear to have adequate staff capabilities to support Silo 3, AWR and Silo 1 and 2 treatment activities. This is particularly troubling as the silos project appears to be moving toward more Fluor Fernald self-performance of silos activities.

Managing a project requires complete and intense focus on a specific project. Assigning responsibilities not directly related to the project (e.g. "portfolio assignments") dilute a project manager's focus. To be fair to project managers, and maximize the opportunity for project success, project managers and other key project support staff should be relieved of such peripheral activities and allowed to focus on their respective projects.

A successful project also depends on a unified consistent team. The silos project has been plagued by frequent and excessive personnel turnover. Individual project personnel are also often detailed to other short-term assignments. Personnel turnover and multiple responsibility assignments are contrary to team building, reduce ownership (responsibility, authority, and accountability), and reduces the chances for success.

To build a team that can successfully manage the silos project, Fluor upper management must increase the importance of project management and the silos project through acquiring qualified personnel and maintaining continuity in key project personnel. The CAT wrote the following in December 1997 (CAT Report #1): "Upper FDF management must support this project in order for it to be a success. This includes a clearly defined mission statement to which upper management is committed." More specifically, this would involve ensuring adequate personnel resources in the areas of RAM analysis, process engineering, constructability, remote technology, construction, inspection and acceptance, operational readiness, and procurement.

General Comments

- Silo 3 must implement and enforce the design, engineering and field change processes. Currently, construction activities are altering designs without associated design change requests (DCRs). This is unacceptable and places the project in great jeopardy, especially given the requirement for EPA approval of many design changes. As the project progresses, failure to follow established change processes and

consistently update design drawings can impact safety, operability, maintenance and operational readiness review activities. In addition, undocumented changes could lead to the project being out of compliance with regulatory requirements, not to mention worsening regulator relations.

Failure to implement the design change process also leads to inaccurate (and possibly nonexistent) redline drawings. As construction progresses, it is extremely difficult to update redline drawings as equipment is covered up, buried, or becomes difficult to access. Therefore, redline drawings must be maintained current as construction is completed to ensure accurate as-built drawings.

- The CAT has reviewed several monthly variance analysis summary reports in an attempt to determine the status of the silos projects. These reports are difficult to understand—the cost numbers are difficult to relate to text, performance curves are not included, and variance analyses are incomplete. In addition, including accruals in the performance data results in misleading data that does not accurately reflect actual performance.

The silos project should be making more use of monthly reports as a tool for managing the projects. To accomplish this, Fluor Fernald should develop and issue monthly reports that accurately identify and report: (1) project status; (2) baseline variances; (3) corrective actions; (4) responsible parties and due dates; and (5) revised estimated cost to complete (ETC).

Implementing the above project reporting approach will be required by the recently issued DOE Order 413.3 (issued October 13, 2000).

Lastly, distribution of these reports seems overly narrow. Fluor Fernald should distribute reports and other important project documentation throughout the project.

- The CAT remains concerned with operations and maintenance issues associated with both the Silo 3 arm and the AWR EMMA arm. These concerns are heightened by the Oak Ridge Gunitite Tanks Remediation Project lessons learned which emphasize the importance of rugged, reliable equipment and extensive training in remote arm operations (attached, Boling and Short presentation to Tank Closure Workshop, October 1999). Given this, Fluor should convene a focused team to conduct a thorough, in-depth review of both arms to verify operability, maintainability, availability, operator training plans, and fabrication activities. Lastly, given the high technical risk associated with the arms and the critical role of arm performance in the silos project, the CAT repeats its recommendation to develop (or at least identify) alternatives to arm based retrieval.
- The AWR Project Manager was prepared and had clearly given thought to presenting project status information to the CAT during this trip. The CAT is appreciative of his preparation and efforts to support CAT AWR project information requests.

The Silo 3 Project Engineer was also helpful in providing the CAT the status of the Silo 3 project, despite not having advance notice. The CAT is grateful for his time and effort.

- Both AWR and Silo 3 are implementing some 'fast track' activities. In the DOE environment, fast tracking is extremely risky and, unless thoroughly planned and carefully executed, generally increases (rather than decreases) cost and schedule. The CAT recommends that Fluor Fernald use extreme caution in pursuing and implementing fast track activities.
- The CAT has been impressed with the development of the Operational Readiness Review process. However, given that the manager for this activity is leaving the project, the CAT is concerned about continued management support of readiness. Without such support this process is likely to be neglected and eventually become a crisis.
- Both Silo 3 and AWR contractors are in the process of proposing project changes (often based on value engineering studies). Fluor Fernald must ensure that acceptance or denial of the proposed changes recommended by these studies is accompanied with a clear, documented rationale supporting Fluor Fernald's decision. Maintaining such documentation in the project file will be important in refuting claims.

Silo 3

This CAT review of Silo 3 progress was focused primarily on the current status of the project.

The CAT is extremely concerned about the status of the project's schedule. In short, Silo 3 is not making adequate progress. This is not a new concern, the CAT has been uneasy with the lack of Silo 3 progress since early in the project as shown by the following chronology of CAT report excerpts:

15 September 1999 (Report #10): The CAT is surprised that the conceptual design is not completed. The contract was signed six months ago and it is reasonable to believe conceptual design should be further along. The slow design process amounts to using schedule contingency too early in the project life-cycle. This contingency will likely be needed later in the project and shouldn't be squandered now.

28 February 2000 (Report #14): Silo 3 is showing significant performance problems related to schedule and poor quality design documentation. This could be the result of lack of understanding of original bid requirements and expectations, management problems, lack of capable personnel, or inadequacies in the contractor's teaming process. In any case, almost one year has passed since the contract was signed; yet work accomplished to date represents only about 4 months of serious design work.

Rocky Mountain Remediation Services (RMRS), while accommodating and agreeable, have not been responsive. With a slow start on design (see CAT report #10, 15 September 1999; and Roal trip report, 27 October 1999) and continued problems on developing acceptable quality design documentation, the CAT recommends decisive action on the part of FDF. Immediate and direct discussion with RMRS, FDF, MK and BNFL senior managers should be held, corrective actions established, responsible parties identified and due dates established, hopefully no later than the end of February.

If RMRS is able to improve performance in the near term, FDF should implement the following actions:

- *Develop an action plan for schedule recovery. RMRS' Silo 3 working schedule (date 2/3/00) indicates negative schedule float in several areas; Final Hazard Analysis Report, preliminary design package, procurement activities, consumables, and construction. Negative (or near negative) schedule float during preliminary design activities is of concern. Float should not be consumed in early phases of a project because of the difficulty in regaining schedule.*
- *Silo 3 should be identifying and maintaining an action item list (if one does not exist) similar to that maintained by AWR. The purpose of this list would be to identify items, assign responsibility and track open items/issues to closure.*

The Silo 3 project should also be developing a backup plan if RMRS is unable to improve performance in the near future. This plan should consider other contractors as well as FDF self-performing the work

Recommendation 14-3: FDF should immediately conduct discussions with RMRS, MK and BNFL to establish Silo 3 corrective actions, identify responsible parties, and establish near term milestones.

Recommendation 14-4: FDF should develop a backup plan if RMRS is unable to improve performance in the near future.

Using existing project documentation (variance analysis summary reports), it is difficult to accurately assess the project's current schedule status. However, it appears that the project is at least seven months behind schedule. This amounts to nearly a 30% project delay. Based on the September summary and control account variance analysis report the remediation subcontractor (4S31D) has a schedule variance of -19%. This is an

unusually large negative variance for this early in the project life cycle, and is a clear indication of a lack of progress. In addition, based on the method being used to establish project progress, the CAT believes that actual variances are worse than reported. To recover the schedule, RMRS would have to increase performance 150% (essentially completing 33 months of work in 23 months). Recovery of this schedule is extremely unlikely, given the current schedule delay occurred during the project's least challenging activities. The more serious challenges remain including:

- Development, training, deployment and operation of a one-of-a-kind remotely operated robotic arm.
- Construction, testing and startup of the facility and its systems.
- Operational Readiness Review and startup approval issues.
- RMRS management, maintenance and operation of the completed facility using Fernald's labor force.

The CAT sees termination of the RMRS contract as inevitable, particularly since this appears to be RMRS's desire. If termination occurs, it must be a planned, reasonable, and structured activity. The CAT suggests expedited consideration of alternatives to quickly complete the design. Completion of the design is necessary for several reasons. First, it brings this activity to an orderly completion and leaves the site with a product (if unfinished, the design is of no value). Second, even if the design is not pursued, it will provide a basis for future project work, estimates and evaluation. Lastly, the design will provide a fall-back position in the event an alternate path forward fails.

The Silo 3 experience emphasizes the importance of preparing and issuing meeting minutes and documenting telecons. Claims situations and contract disputes can be avoided or minimized through due diligence in the area of project documentation (e.g. meeting minutes, telecons, construction photographs).

Accelerated Waste Retrieval

The CAT has not seen the report produced by the AWR DOE Tanks Focus Area team. However, after reviewing questions forwarded by DOE to Fluor Fernald, the CAT advises Fluor Fernald to clearly communicate to DOE the resource and scope impacts of responding to these questions.

It is not clear what actions Fluor Fernald took between April and August while the AWR contractor was without project management. In the future, to keep the CAT adequately informed, the CAT requests that Fluor forward significant project correspondence and documentation.

The CAT sent a letter to Fluor Fernald concerning the design of the Radon Control System in July, 2000. This letter expressed continuing concern over the apparent lack of conservatism in the design. The CAT has not received a response to this letter. In addition, the project manager apparently did not receive a copy of the letter

Recommendations

Recommendation 17-1: Fluor upper management should increase the importance of project management and the silos project through acquiring additional qualified personnel and maintaining continuity in key project personnel.

Recommendation 17-2: Silo 3 must implement and enforce design, engineering and field change processes. Also, both Silo 3 and AWR must ensure that contractor proposed changes include a clear, documented rationale supporting Fluor Fernald's decision.

Recommendation 17-3: The silos project should make more use of monthly reports as a tool for managing the projects. To accomplish this, Fluor Fernald should develop and issue monthly reports that accurately identify and report: (1) project status; (2) baseline variances; (3) corrective actions; (4) responsible parties and due dates; and (5) revised estimated cost to complete (ETC).

Recommendation 17-4: Fluor should convene a focused team to conduct a thorough, in-depth review of both arms to verify operability, maintainability, availability, operator training plans, and fabrication activities. The CAT also repeats its recommendation to identify and/or develop alternatives to arm based retrieval.

Recommendation 17-5: The CAT recommends that Fluor Fernald use extreme caution in pursuing and implementing fast track activities.

Recommendation 17-6: With the turmoil surrounding the Silo 3 RMRS contract, the CAT suggests expedited consideration of alternatives to quickly complete the design whether the contractor remains or is terminated.

Recommendation 17-7: Fluor Fernald should clearly communicate to DOE the resource and scope impacts of responding to the questions put forth by the Tank Focus Area DOE Review Team.

Recommendation 17-8: The CAT was not made aware of many of the Silo 3 and AWR contract difficulties during the last year, In the future, to keep the CAT adequately informed, the CAT requests that Fluor forward significant project correspondence and documentation.