

Critical Analysis Team Report
on
Revision of the Fernald Environmental Management Project
Baseline

CAT Report #20¹

26 March 2001

I. Major Comments on the Baseline Revision Package.

The Critical Analysis Team (CAT) has reviewed the alternatives associated with revising the Fernald Environmental Management Project Baseline. The CAT commends both DOE and Fluor Fernald for the extensive stakeholder involvement efforts undertaken to ensure public values are reflected in any new baseline direction.

The CAT's scope of work currently includes only the Silos Project. Therefore, the bulk of CAT comments pertain to silos issues and impacts of the alternatives.

Planning efforts of this magnitude and complexity are generally accurate for little more than one year. When plans are overtaken by events, it is often due to an original planning assumption that proved to be false. In the case of this rebaselining, the following two questions are based on major assumptions about the future. Each question should be asked of each scenario in assessing the best path forward.

If funding is reduced below \$290 million, what doesn't get done? This question is based on the assumption that Fernald will receive a flat budget of \$290 million for the next ten years. While \$290 million is a significant cut for Fernald, it is by no means a guaranteed funding level. It is likely (particularly over the next decade) that Fernald's budget will be increased or decreased. Because of this, it is important to judge each scenario's strength based in part on its budgetary flexibility. Most importantly, each question must be asked when each scenario is considered.

What are the impacts if AWR and/or Silos 1,2, and 3 treatment efforts fail? This question is based on the two-fold assumption that, (1) the Accelerated Waste Retrieval project will finish on-time and within budget; and (2) the Silos 1,2, and 3 treatment effort can be designed, constructed and operated as planned.

¹ CAT Report #20 is the first CAT Report under a new charter that establishes a more direct link between the CAT and DOE-Fernald.

The CAT's concerns with the AWR project are well documented. While AWR has made progress, the project is currently behind schedule with the potential to fall further behind. Ultimately, delays to AWR could greatly increase the cost of the project thereby significantly impacting baseline assumptions. Because of this, each scenario should be judged under hypothetical cost and schedule growth in AWR. Lastly, very little information exists as to the Silos 1,2, and 3 effort and, given the Silos Project history, the CAT is reticent to assume success.

Recommendations

Recommendation 20-1: The impacts of reduced (below \$290 million) Fernald funding should be fully considered in making the revised baseline decision.

Recommendation 20-2: The potential for significant baseline impacts due to AWR delays should be fully considered in making the revised baseline decision.

II. Specific Comments on the Baseline Revision Package

The above represents the CAT's two most significant concerns. Following are more specific comments about the baseline revision package.

Presentation and analysis of alternative cases should be consistent.

- Scenario 6 Silos Project Training, SOT, and Readiness activities overlap construction by six months. This overlap is a reasonable planning assumption. However, a similar overlap does not exist for Scenario 3 Silos Project. This accounts for nearly six months difference in project completion.
- Why does construction take three months longer for Scenario 3 than Scenario 6?
- The Scenario 6 data includes a four-page summary of important information. Why isn't similar information provided for Scenario 3?
- The legend on the schedules is not the same. Scenario 6 has an Early bar, Progress Bar and Critical Bar Activity Bar. Scenario 3 has an Early Bar, Target Bar, Progress Bar and Critical Activity Bar. If one is to make comparisons, the schedule presentation formats should be identical.
- The Scenario 3 timeline used or presented in the CAB meeting materials is different from the Scenario 3 presented in the Funding Prioritization Scenarios binder. For example, the binder shows 6/09 for completion of the Silos Project, the CAB materials show 10/08; Scenario 3 shows 10/05 for conclusion of waste pits, the CAB materials show 3/06.

Some planning assumptions do not appear realistic.

- Successful contractor funding of D&D is probably not viable. This approach raises multiple legality questions (re: committing DOE to expenditures not yet appropriated). In addition, the approach is vulnerable to the same failure mechanisms as privatization.
- While successful examples of key personnel retention exist, such efforts rarely meet with success. Retaining key personnel requires maintaining meaningful work scope, and equivalent responsibility and authority for each individual. Further, maintenance of only three key project personnel will accomplish little without a skilled staff. Such a staff is unlikely to be drawn from the general worker population.

The retention program objectives will be difficult to meet given the reduced work on the project and the fact that key personnel will likely prefer to transfer to more rewarding work elsewhere. Strong, effective management of the retention program will be critical to success.

- Complicated long-range cost and schedule estimates are inherently risky. The contingency included in the revision scenarios is extremely low (\$5 million per year or only about 2%). Failing to include reasonable contingency virtually ensures most of the projects will be over budget and schedule.

Rapidly changing staffing levels is extremely difficult.

- Scenario 3 Silos Project (PBS 07) increases staffing by 509% (from 71 to 362 FTEs) between FY 2004 and FY 2005. This staffing level then drops by 50% between 2005 and 2006 (from 362 to 180 FTEs) and then is increased again in FY 2007 by over 100% (from 180 to 410 FTEs). Scenario 6 has an increase in staffing from FY 2004 to 2005 of 525% (from 85 to 447).

These dramatic staffing changes raise two concerns: (1) ability of Fernald to hire, train, reassign and badge qualified personnel to effectively and efficiently support the project; and (2) the cost of such personnel shifts.

First, the Scenario 3 Silos Project timeline shows training beginning at the end of FY 2005 and operations beginning the last quarter of FY 2006. The staffing levels do not appear to correlate with these project activities. Furthermore, personnel cannot be reassigned this rapidly, and if they are, the reassignment is likely to prove ineffective. It would be extremely difficult to effectively manage a DOE project with such large staffing fluctuations.

Second, the increase in staffing for both scenarios from FY 2004 to 2005 do not appear to be accompanied by commensurate increases in labor costs. For Scenario 3, the labor force increases by 362 yet labor costs only increase \$19 million (thus, each person costs \$66,000). For Scenario 6, the labor force increases by 291 yet labor costs only increase by \$24 million (thus, each person costs \$55,000). These labor costs appear low.

Lastly, the average FTE labor rate increases between FY 2001 and 2009. It appears that these increases are due to 3% annual escalation. However, between FY 2002 and 2003, the rates actually decrease. What is the cause of this?

Assumptions of Silos Project progress and performance may be optimistic.

- A scenario in which silos is fully funded yet fails to perform is possible. In this case, the credibility of the entire Fernald site will be at stake—money and time will be spent with little or no demonstrated progress. To mitigate this risk, if a silos full funding approach is chosen, Fluor Fernald and DOE must develop a plan that virtually guarantees success. The plan must provide for quick identification, evaluation, and correction of any failure-to-perform issues that arise.

Budget Assumptions

- The CAT is not clear on funding and escalation issues pertaining to the flat \$290 million funding scenario. It appears (from Susan Brechbill's letter) that the \$290 million will never be adjusted for escalation, but Fluor Fernald's cost estimates do assume escalation when considering total budget. Clarification and consistency in the use of the \$290 million budget level and its escalation assumptions is needed.
- The shortfalls projected in 2001 and 2002 should not be overlooked. These two Fiscal Years, if projections are correct, will create massive challenges—Fernald will have to become 50% more efficient in 2002 than 2001 ($\$23/313=7.3\%$ vs. $\$34/324=10.5\%$).
- If Fernald were to receive full funding for the next five years, it remains unlikely that 2006 project closure could be met.
- Current Environmental Management budget uncertainty raises the question of Fernald impacts of a *less than* \$290 million scenario. To fully bound potential impacts, Fluor and DOE should consider developing a worst case scenario budget profile. If a reduced budget case is required for DOE-Headquarters submittal, this case could simply be applied to the baseline development discussion.
- The Scenario 6 Funding Scenario Impacts states: Escalation—Used current MPM rates (3%/yr.) for out-year escalation. However, the Element of Cost—Baseline uses escalation figures from 1.14 to 1.5 Why is there a difference?
- The FY 2002 Funding Impact Analysis – Fernald sheet states, “An additional \$34M in funding pursuant to the original baseline funding profile, in FY 2002 and beyond, would allow Fernald to stay in compliance in FY 2002 and would also position the project to meet milestones and regulatory expectations in subsequent fiscal years.” This statement implies that the shortfall in FY 2001 and the “ripple effect” written of earlier is not actually critical to site closure.

Alternative 6 and Alternative 3 Specifics

- Scenario 6 Silos Project schedule shows start-up of AWR six months after training, readiness and completion of construction. Why is startup delayed by six months?
- Scenario 3 Silos Project Training, SOT, and Readiness activities are not started until construction is complete. As a result, start-up is delayed one year after construction. Such activities generally begin during construction. It seems operations could be initiated nine months earlier if the above activities occurred concurrent with construction.
- The regulatory perspective is missing an important piece—possible regulatory action. An understanding of the severity of potential regulatory actions due to noncompliance is useful in effectively evaluating the alternatives and making sound baseline decisions.

- The Reduction of Radioactivity (Curies) and the Potential Risk to the Undeveloped Park User seem to indicate no significant discrimination between the scenarios. Assuming the risk scale is the expected increase risk of a fatal cancer from a predetermined exposure, the difference in the scenarios in reaching a level considered protective of public health by EPA ($1.0E-04$ to $1.0E-06$) is little more than three years. Further, this risk is present during a period of time when it is reasonable to assume that exposure will be limited through continued DOE control of the Fernald site (2008-2011). Given this, risk reduction timing does not seem to differentiate between the scenarios.