

Fluor Fernald – Project Controls Process

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ABSTRACT

This paper will look at the project controls process Fluor has developed to ensure cleanup can be declared and verified by the contract in the shortest time possible.

In November 2000 the Department of Energy and Fluor Fernald entered into a closure contract that incentivized Fluor Fernald to reduce the cost and schedule of the cleanup. Original schedule estimates to complete the job went well beyond 2010. In 2002 the Department of Energy (DOE) renegotiated the contract with emphasis on completing the cleanup by December 2006. This model for site closure was developed and has worked effectively to move the project through the cleanup phase, to change a culture and set in motion the steps necessary to declare closure and ultimately leave the project in a timely manner. It is Fluor's goal to complete the project safely, ahead of schedule and cost estimates thereby maximizing profit for company shareholders.

This paper will demonstrate the successful implementation for an integrated project management system that has been proven and used on the Fluor Fernald project. The objective is to summarize the approach used at Fernald in setting forth those management processes to accelerate schedule and reduce cost while managing the project safely.

INTRODUCTION

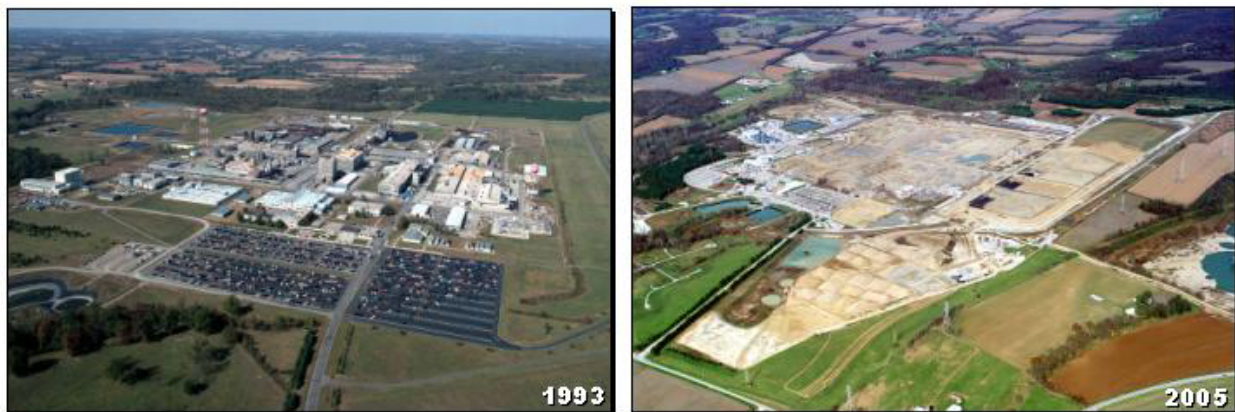


Fig. 1. Aerial photos of the Fernald site

Fluor Fernald's Project Controls System is a fully integrated quantity, cost, schedule, and estimating system that allows the Fernald team to perform needs assessments, manage resources, and evaluate the impact of proposed changes on a real-time basis. It also promotes work

efficiency by providing the means to manage project inter-relationships, resource demands, and complex day-to-day project logistics. This system incorporates a “tool box” of business systems software that interfaces directly with the site’s accounting and human resources systems to ensure that project status and planning decisions are made using complete and up-to-date information.

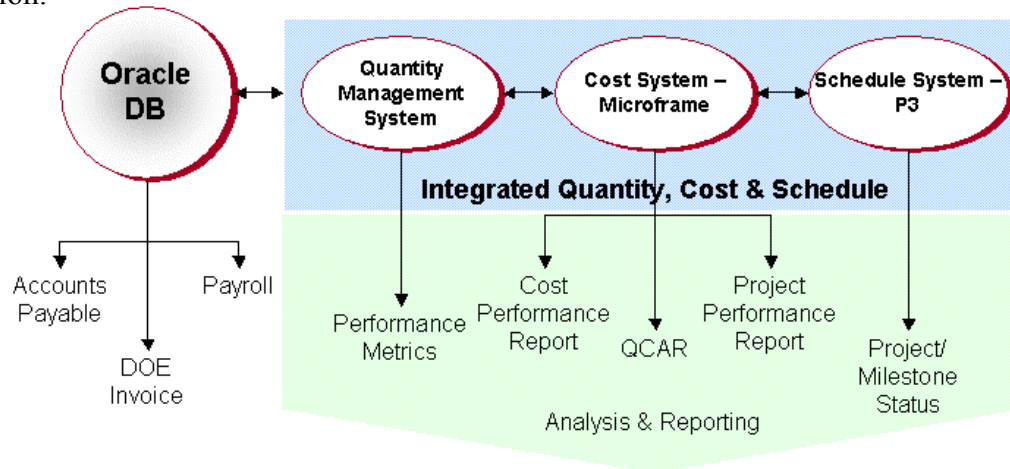


Fig. 2. Project controls system

THE PROJECT CONTROLS SYSTEM

The objectives of the Project Controls System are to assure that all project work is identified, planned, monitored, and managed. These objectives are focused towards the establishment of a "Good Business Practice" approach in setting forth those management processes required to manage project work. These processes include:

Defining and Organizing The Technical Work Scope

- This facilitates the planning process by subdividing the work into logical elements to simplify the scheduling, estimating and budgeting the work:
 - Scheduled with cross project integration by schedule ties
 - Readily estimated
 - Delineate work scope and budget with project integration
 - Earned value (EV) or performance can be measured
- Describes the work to be accomplished and the manner in which it is planned
- Provides a logical summarization of similar work
- Provides the framework for:
 - Cost collection during the period of work performance
 - Assignment of responsibility at the organization level at which the work will be accomplished
 - Summary levels of cost, schedule, and performance information for management review and reporting
- Provides for the integration of work scope, resource requirements, cost, schedule, performing organization, and responsibility assignment
- Provides the basis for future change control activity

- Clearly defines the desired end state and drivers
- Aligns the workers, organized labor, stakeholders, and regulators on the vision
- Provides for the development of a detailed plan from start to finish with required funding needs

Identifying and Estimating Resource Requirements

- Using the Fluor developed manpower forecasting tool (Manpower Planning System) Human Resources, Project Managers, Project Controls, and Executive Management work together to develop the manpower resources needed
- Is structured for each project/program by individual name, resource, and projected end date
- Establishes the “business case” for planned workforce reductions
- Develops an efficient, credible process for identifying employees for layoffs based on the project baseline and skills needed for remaining work
- Outside professionals consult with Human Resources and train management on the workforce reduction process
- Monthly review of plan by management occurs to insure aggressiveness
- Reductions are real-time based on the statused plan

Establishing Budgets

- Fluor uses internally developed planning model software to plan large pieces of work in order to meet DOE funding constraints, then the detail planning is modified to meet these targets
- Develop an explicit and comprehensive level of detail in the basis of estimates to both promote agreement on the scope of work and also the ability to identify changes to the agreed upon scope
- Develop detailed execution plans
 - Project Plan Narratives – This is a detailed narrative that describes what is the scope of work, bounds the work with the assumptions and describes the approach to execute the work
 - Project Technical Scope – This is a detailed technical quantification of the scope of work. The technical scope of work will quantify each major remediation task in the scope of work
 - Project Schedule – A schedule of activities required to perform the project plan
 - Manpower Plan – A manpower plan identifying the resources needed to accomplish the scope of work for the project
 - Estimate – A detailed estimate for the scope of work and the support requirements directly charged to the project
 - Risk Mitigation – Used to identify the key risks that have been identified, the impact of the risk, the probability level, and the criticality of the risk
 - Support Data – Drawings, sketches, or other support data that is used to support other sections of the plan
- Project cost estimates are the basis for developing the budgets for all defined project work scope. When the budgets are time-phased over the scheduled period of performance, they become the basis for funding requests from the prime contractor to DOE, and from DOE to

Congress, and result in funding authority flowing down to the prime contractor to execute the project's work scope

- Cost estimates are developed for the technical baseline defined through the work definition process. They become the basis of the budgeting and funding process. Finally, when the budgeting and funding process is integrated with the scheduling process, the Performance Measurement Baseline is established
- Identify proper Earned Value Methods to generate accurate performance data

Establishing Schedules

- The purpose of scheduling is to provide a tool for logically implementing the plan or scope of the project
- Schedule development consists of working with the project team to capture the plan or scope of the project from beginning to end
- Create definable work tasks in a logical sequence for accomplishing the project or program objectives
- Develop key milestones
- After the tasks are logically sequenced, an analysis is performed to evaluate and identify potential risk activities and critical path tasks for the project with inter-project ties

Authorizing Work

- Develop fiscal year work plan in order to control spending and accelerate schedule
- Develop a prioritized "Wish List" for work to be authorized as funding becomes available
- Identify any potential work scope or requested schedule acceleration above the approved work plan on the Funds Utilization Report
- Work can be started only after the work package has been established and the baselined work scope authorized by means of the change control process
- The work is authorized to proceed with the Control Account Manager having schedule and cost responsibility

Austerity Program

- Scrutinize all requisitions
- Develop a single point of contact on all purchase authorizations
- Develop a process to review needs and standards vs. luxuries, in areas such as software, office supplies, etc.

Accumulating and Assimilating Cost and Schedule Performance Information

- Fluor uses Primavera Project Planner for scheduling, Microframe Program Manager for cost, and Quantity Management System to quantify the work. All systems are completely integrated
- The overall planning process places considerable focus on estimating costs and continually refining project plans, attempting to strike an optimum and challenging balance between cost constraints, schedule and technical objectives

- The planning process is in continual evolution as the prime contractor strives to identify and implement programmatic, operational, legislative, institutional, and other requirements, constraints, and assumptions that may affect technical, schedule, and cost baselines and funding availability
- The planning process also attempts to maintain cost estimate continuity with changing technology, always striving to incorporate the most effective and efficient approaches to environmental restoration
- Develop proper Earned Value Methods to provide a less subjective approach to performance measurement
- Update forecast cost and schedule regularly to identify issues and make corrective actions

Managing Funds

- Conduct monthly estimate-to-complete meetings to determine project status and funding requirements
- Maintain and adjust a wish list of projects to be funded
- Actual costs plus the estimated cost and financial obligations to complete the fiscal year are reported on the Funds Requirement Spreadsheet to assure the costs do not exceed available funds
- Project/Program Managers are to maintain ownership on their open financial obligations as well forecast open financial obligations at year-end
- Project/Program Manager reports this information to Project Controls Funds Management through the estimate-to-complete process
- Project Controls Funds Management subsequently reports this information to the Prime Contractor Leadership Team and ultimately to DOE as part of the monthly reporting process

Reviewing and Reporting Progress and Forecasts to the Customer

- Every two weeks the project manager reports program status to upper management in a War Room meeting where safety, quantities, cost, schedule, and performance are reviewed
- The five specific objectives for the development and use of the War Room:
 - To provide and continue implementing a highly disciplined project management culture across the site with an emphasis on personal accountability
 - To provide a management tool that measures cost, schedule, and physical progress to determine performance
 - To identify the sequence of activities and interfaces between projects
 - To promote project integration
 - To identify the detailed plan for each project to meet closure and provide short-term implementation plans to assure that work is performed on time and within schedule and review status of regulatory milestones
- Determine the current condition and status of the project, compare current scope, schedule, funding status, and cost performance with planned performance
- Find the root cause of problems and develop corrective action plans before problems escalate

- Forecast expected completion costs and dates when it is evident that either cost underruns/overruns or ahead of/behind schedule conditions will prevail



Fig. 3. War Room Concept

CONCLUSION

The Fluor Fernald Project Controls System integrates the Project Management Plan, the project procedures, “tool box” of business systems software, project planning and execution including ISMS and quality control/assurance into a comprehensive, state-of-the-art management tool. This system satisfies two key requirements for the success of any management system:

- Integration of system elements
- Management tool used to achieve goals and targets of the project

With the use of the Fluor Fernald Project Controls System the project was able to accelerate the schedule by nine months and \$300 Million.