

## FMI PCS SELF ASSESSMENT REPORT

October 29, 1993

### **I. OVERVIEW**

We have completed an assessment of the status of the FMI Project Control System Description (PCSD) that is called for by the FMI Project Management Plan (PMP). The assessment has emphasized two major aspects of the Project Control System - namely, the PCS Description document itself (its adequacy, completeness, conformance to DOE requirements, etc.) and the status of the implementation to date of the PCS (its adequacy, completeness, status of necessary improvements, etc.). This assessment was carried out during the period May-October, 1993.

Our assessment of the PCSD document is provided in Section II of this report, and our assessment of the implementation of the PCS is presented in Section III. Finally, a plan for proposed follow-up corrective actions in response to this PCS self assessment is addressed in Section IV.

### **II. ASSESSMENT OF THE PCSD (JULY 1993 VERSION)**

The PCSD was originally drafted to comply with the provisions of the FMI PMP, and following the requirements and guidelines provided in DOE Order 4700.1 and DOE Order N 4700.5. Subsequently, the DOE Project Manager provided a Risk Analysis and DOE-CH provided a written critique of the PCSD; the March 1993 DOE-ER Review of the FMI Project provided additional comments and recommendations; the PCSD has been revised in response to these items. The July 1993 version of the PCSD also contains a number of additions and improvements which were judged to be appropriate, following a review by the FMI Cost/Schedule Controls Group (CSCG) of the DOE draft document, "Project Control System Guidelines Implementation Reference Manual", which had been received from the DOE Project Manager in March, 1993.

#### **Findings and Recommendations:**

##### **FMI-PCS-93-1:**

The procedures for formal authorization by the FMI Project Manager (following receipt of a directive from DOE-BAO) of work to be undertaken by Level 3 Managers (L3Ms) need to be clearly stated. The requirements for definition by the L3Ms of the details (technical, estimated cost, and planned CPM network schedule) of the newly authorized work need to be specified. Similarly, the procedures to be followed by the FMI Project Manager, the L3Ms, and the CSCG, following a DOE-directed BASELINE CHANGE, should also be clearly stated in the PCSD.

##### **FMI-PCS-93-2:**

The monthly schedule status updates by L3Ms (CPM network schedules) which are required for updating the project progress data in the Integrated Project Schedule (IPS) need to be specified in the PCSD. Also, the procedures whereby these L3M monthly schedule progress data received by the CSCG from the L3Ms are integrated into the Open Plan IPS, and audited for accuracy and completeness, need to be described in the PCSD.

##### **FMI-PCS-93-3:**

At present, any modification of a contract, whether civil or technical, requires an ECR and BCCB action if the dollar values involved exceed \$5K. In fact, experience has shown this to be both

cumbersome and untimely, especially for civil contracts in the field. It would be far superior to consider creating a dedicated management reserve account for larger contracts funded with a few percent (say 3% to 5%) of the contract value to cover change orders processed in the field, or requested in response to timely considerations. At the conclusion of the contract all changes would be reported and a final ECR to reconcile the cost at completion processed. To prevent abuse, it should be required to process an interim ECR if the net costs exceed the agreed upon value set at the start of the contract.

**FMI-PCS-93-4:**

Consideration should be given to adopting accounting practices, which will allow us to identify the cost of Title III work associated with a particular contract. The solution to this is not clear; at present Title III work for all civil construction is lumped with Title II in the EDIA codes. Title III is EDIA work and it is probably not appropriate to lump it into the construction costs. It is also not particularly useful to know Title III costs in total only. The useful information is the Title III costs associated with particular construction or technical contracts.

**FMI-PCS-93-5:**

The PCS should include in the discussion of signature chains the approvals from the budget office, the business office, and the Directorate, including the dollar amounts. The PCS should explicitly mention NEPA approvals based upon the EA.

**FMI-PCS-93-6:**

Consideration should be given to the fact that the FNAL budget office only considers the project total obligation authority, and the cost code "open" status. The budget office does not consider whether a requisition pushes a level 3 (or lower) cost beyond its authorization, nor does the office check for consistency at level 2. Since it is unlikely that the level of scrutiny at the budget office can be altered, the responsibility rests with project management to assure that the levels approved in DOE construction directives at level 2 and below is not exceeded.

**FMI-PCS-93-7:**

The PCSD, CMP and ECR procedures should be modified accordingly to include a recently established requirement that CSCG sign-off on all draft ECR's before they are finalized and presented to the BCCB. This requirement was established in order to allow the CSCG an opportunity to offer their concurrence with the stated cost and schedule impacts on the ECR.

**III. ASSESSMENT OF THE IMPLEMENTATION OF THE PCS**

**Findings and Recommendations:**

**FMI-PCS-93-8:**

Some training of CSCG staff and of L3Ms, concerning their responsibilities in the implementation of the PCS, has already been given. However, substantial additional training for L3Ms is needed, in particular concerning the implementation of the details of the work authorization process, CPM network schedule development by L3Ms, and schedule progress reporting processes. Further training is also recommended, for the CSCG staff person responsible for the maintenance of the Open Plan schedule database.

It is also recommended that the FMI Project Manager provide formal letters of appointment to L3Ms, spelling out in specific terms the details of their responsibilities as L3Ms for implementation of the FMI PCS.

**FMI-PCS-93-9:**

As the operation of the PCS continues, further self-assessments of its adequacy and effectiveness will be appropriate. It is recommended that the next self-assessment of the type described in this document be performed approximately one year from now. The timing should allow for incorporation of improvements in the PCS before initiation of purchases using FY95 funds. In the interim, it is anticipated that external review and appraisal of the adequacy and effectiveness of the FMI PCS, both by the ER Semi-Annual Review process and by a CH Functional Appraisal of the PCS, will provide additional recommendations for improvements to the existing FMI PCS.

**FMI-PCS-93-10:**

It is recommended that the CSCG review the validity of all of the "large apparent floats" in the Integrated Project Schedule; there may in some instances be logic defects rather than large floats in the CPM schedule network.

**FMI-PCS-93-11:**

It is recommended that the FMI Project Manager should review and approve the Baseline Integrated CPM Project Schedule (IPS), and all changes made to the baseline in the IPS.

**FMI-PCS-93-12:**

In order to more effectively evaluate project performance, L3M schedules should include a separate activity for any procurement action that falls into either of the following two categories: 1) those with a value of \$50,000 or more, or 2) those for items which are on the L3Ms critical path, regardless of the amount; split-coded purchase orders and contracts will require that an activity under each applicable WBS account be established. In the case of procurements involving multiple deliveries and/or partial payments, each delivery of goods and/or services and the associated cost should be reflected as a control milestone. Procurements for which payment is based upon a single delivery should reflect the entire cost occurring concurrent with delivery. In many cases the L3M may be able to assemble this information by examining existing contract documents. Or in some cases, it may be necessary for the L3M to contact the vendor for a delivery and/or payment schedule. Future procurements should be handled in a similar manner using the L3Ms best guess as to delivery dates and the recognition of cost. It is recommended that all future bid packages for procurements that are expected to meet or exceed the \$50,000 threshold should include a request for a vendor supplied delivery and invoicing schedule, if partial payments are anticipated.

**FMI-PCS-93-13:**

It is recommended that all ECR's should address, under "schedule impact", whether or not this impact constitutes a change to the schedule baseline; any statement of "no schedule impact" needs to be justified, in explicit terms in the ECR. Each ECR should also indicate whether or not this is a "scope" change.

**FMI-PCS-93-14:**

Consideration should be given to how we can generate a more meaningful Monthly Report to DOE. Given the fact that the majority of the work required to complete the FMI Project will be managed under lump sum fixed price contracts, the usefulness of a reporting format that speaks in terms of earned value and "dollarized" schedule variances falls under question. Greater emphasis should be placed on reporting and evaluating variances related to overall project performance (such as EAC versus the current baseline) rather than the presently required interim time frames, current month and project-to-date. It will be necessary to obtain approval from DOE if we wish to depart from the standard DOE reporting format. Regardless of whether DOE elects to adopt a new reporting format, we should consider it for our own internal purposes as the present reporting format does not appear to adequately meet the needs of the L3Ms.

#### **IV. CORRECTIVE ACTION PLAN AND SCHEDULE**

It is recommended that a Corrective Action Plan and a Schedule for Corrective Actions be developed following receipt of the final report of the PCS Functional Appraisal by DOE; this is proposed in order to incorporate responses to the findings and recommendations from this PCS Self Assessment and the DOE Functional Appraisal into one, coherent overall Corrective Action Plan and Schedule. The Corrective Action Plan and Schedule should include: responses to FMI-PCS-93-1 through FMI-PCS-93-14; responses to all the items listed in a table of incomplete parts of the PCS that W.B.Fowler presented at the DOE Preliminary Compliance Review in September 1993; also, responses to findings and recommendations listed in the DOE Preliminary Compliance Review Report (including those listed in the attachments thereto); also, the responses to recommendations concerning schedule and funding in the ER Review Report (October 1993); and, the responses to findings and recommendations listed in the DOE Functional Appraisal Report (the appraisal is tentatively scheduled for November 1-5, 1993). The corrective action plan should be in place by the month preceding the next DOE-ER Review, which is scheduled for March 8-10, 1994.

In conclusion, we note that this self-assessment has been performed in accordance with the "QA Criterion 9" requirements of the (draft) FMI Project SQIP (which continues to await formal approval by the Fermilab Director's Office); the FMI SQIP describes the implementation of the Fermilab Quality Assurance Program (FQAP) for the FMI Project.

FMI COMPLIANCE REVIEW  
OPEN ISSUES LIST  
AUGUST 1993

NO.	ISSUE	DESCRIPTION
1	Response to Work Authorization Statement by L3Ms.	Methods and procedures for documenting activity authorization; i.e., the use of the Activity Authorization Statement and Activity Progress Report, needs to be finalized, including the requirement for definition by the L3Ms of the planned schedule of the newly authorized work.
2	Work Authorization	Formal work authorization (for funds and activities) documentation needs to be brought up to date with current work authorization levels.
3	Reports	Full implementation of the FMI Commitment Reporting System is still in progress. FNAL programming needed to accomplish this is substantially complete, as is testing and debugging of the programs. The following activities continue to require attention: a. Updating the FMI Requisition Database with "implied" commitments. b. Formatting of additional FMI Requisition Database Reports. c. Full implementation of new paperwork routing procedures. d. Making the FMI Requisition Database available on the shared file network. e. Training of personnel who will have access to this information on the network.
4	PCSD Update	Re-write certain sections of PCSD to coincide with methods and procedures which have actually been put into practice. Update PCSD with procedures that were not included in the version issued in July 1993.
5	Training	Training of L3Ms: a. How to read and interpret monthly Accounting and Budget Reports. b. Work authorization documentation interpretation. c. Monthly status reporting to CSCG. d. How to read and interpret monthly reports published by CSCG. e. Bottoms-up Time-Phased Cost Planning process. f. FMI PCSD.
6	Monthly Cost Accruals	Complete implementation of procedures for ensuring that cost accruals are made monthly to record the progress of all subcontractors working on the FMI Project. These procedures are in place for our civil construction subcontractors. This issue then, primarily concerns subcontractors who are performing work for the technical components.