Independent Baseline Review – Final Report

March 31, 2006

Fire Program Analysis System - Phase 2 (FPA-2)

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1. Introduction

Program Description

The Fire Program Analysis - Phase 2 (FPA-2) project is an interagency project of the following five federal wildland fire management agencies, and is being developed in conjunction with the National Association of State Foresters.

- United States Department of Agriculture (USDA) Forest Service (FS)
- Department of Interior (DOI) Bureau of Land Management (BLM)
- DOI National Park Service (NPS)
- DOI U.S. Fish & Wildlife Service (FWS)
- DOI Bureau of Indian Affairs (BIA).

The report titled *Developing an Interagency, Landscape Scale Fire Planning Analysis and Budget Tool* (November 2001) (a.k.a., "The Hubbard Report", prepared by the five federal fire management agencies, the National Association of State Foresters and the University of Montana's School of Forestry in response to a suggestion from the Office of Management and Budget) recommended development of a software application to support fire budgeting and planning. The application would "address the direction from the House and Senate Appropriation Committees and OMB that the Departments of Interior and Agriculture develop a coordinated and common system for determining the most efficient wildland fire management program."

Agencies involved in the project will develop uniform, common and consistent policies, procedures and analysis systems and products that will be used by the USDA FS, BLM, BIA/Tribes, NPS, and FWS. State and local governments may choose, but are not required, to implement FPA. State and local resources owned by those agencies, and lands administered by them, may be included in the planning process.

The five federal wildland fire management agencies use planning analysis models to determine the desired staffing and budget required for wildland fire programs. Presently, these five agencies use different systems to determine their wildland fire management program needs. No one system has been able to adapt to the increasing fire program complexity, thereby creating the need for a new, interagency, fire program analysis system.

The need for developing the FPA System derives from interagency policy and direction guiding the federal wildland fire programs. In order to meet the needs of the federal wildland fire program provided by federal policy guidance, the five agencies must develop a standard, integrated, interagency program analysis system. The FPA System is needed to fulfill the needs of these wildland fire management programs.

FPA-2 will finish moving the agencies to a standard, shared, integrated system that will support consistent analysis across the entire wildland fire management program.

The long-term, strategic objective of the FPA System is to perform a federal interagency, objective driven, performance based fire program analysis for budgeting and organization planning.

The Fire Program Analysis (FPA) system will provide managers with analysis tools to support strategic planning and budgeting for a comprehensive, interagency fire management program. It will evaluate the effectiveness of alternative fire management strategies through time in meeting land management goals and objectives. Since many fire program objectives (e.g. reducing landscape-scale fire threats to values to be protected by changing the structure and amount of vegetation and fuels) require many years to accomplish, FPA will model the long-term program effectiveness of alternative strategies.

The system will be able to determine cost-effective interagency wildland fire management programs for a range of budget levels. The cost-effective program scenarios will recognize the interactions among various program components, such as the synergistic interactions of fuels treatments, wildland fire use, and suppression of unwanted wildland fires.

In order to link the analysis of cost-effective programs to the budget process, FPA will provide national managers with budget development and delivery tools. These tools will allow managers to identify cost-effective interagency programs across all planning units to assist in formulating Department level budgets. The system also will provide tools to assist national managers in allocating funds to all organizational levels based on the cost-effectiveness logic presented in budget justifications.
The modules developed by FPA-2 will support, complement and integrate with the initial attack and wildland fire use models developed within the previously developed Preparedness Module.

The project is managed by Senior Project Manager Daniel Keller, who is Project Management Institute (PMI) Certified Project Management Professional (PMP), and who is also a USDA IT Project Manager Level 3, as validated by the USDA OCIO. Other Project Managers are John Noneman, Deputy Project Manger and Security Officer, USDI Bureau of Land Management, who is also a PMI Certified Project Management Professional (PMP) and Sudhir Rao, Project Manager, IBM Corporation, PMP.

Contract Information

Acquisition for FPA Phase 2 is expected to result in the execution of four contracts.

- Design and Build (IBM)
- Initial Architecture and Requirements (Commonthread, Inc.)
- Support for Capital Planning and Investment Control (CPIC) (SAIC)
- Technical Writing (Teksystems)

The Design and Build contract is performance-based with incentives. This was awarded through a competitive acquisition for the FPA-PM contract in 2003. This contract represents the vast majority of the contracting being conducted in support of FPA-2 – approximately 80% of all FPA-2 contract dollars will be dealt with through this contract. This contract will address the detailed requirements, design, build, test, deploy and implement the FPA-2 application software. This contract will include the following:

- Project management support
- Earned value reporting
- Security Planning
- Development of the conceptual architecture
- Further development of business and system requirements
- Definition of the technical architecture
- Multiple design and build iterations, including prototyping
- User Documentation
- Testing
- Data Migration
- Implementation
- User training and support

The lifecycle cost of the project is budgeted to be $33.5 million. Of the total cost, approximately $9.1 million is projected to be government costs, $22.6 to IBM, and $1.7 for other contractors for program management and requirements definition.

USDA IBR Policy

FPA-2 has been designated as a program requiring an Integrated Baseline Review (IBR) by the USDA Chief Information Officer, Dave Combs, in his memo of November 17, 2005. The IBR was conducted in compliance with OMB and USDA requirements for Earned Value Management and Integrated Baseline Reviews. OMB Memo M-05-23 requires an IBR for fully implementing an EVMS for IT projects. The memo states:

"5. Integrated Baseline Reviews (IBRs) of Developmental Projects

a. You are already expected to achieve 90 percent of cost, schedule and performance goals.
b. You are required to conduct an IBR on contracts with an EVMS requirement, before or after award as appropriate, in order to establish the Performance Measurement Baseline agreed to by both parties and against which performance will be measured. This requirement applies to agency in-house projects as well. The IBR process enables project managers to effectively use the project Performance Measurement Baseline to assess performance, and to better understand inherent risks. IBRs should be conducted using the Program Manager's Guide to the Integrated Baseline Review Process and until the agency has begun conducting IBRs, independent assessments must be performed."

And the memo also states that:

"For all ongoing major IT projects with development efforts (DME), before obligating FY 2006 funds, begin independently validating for reasonableness current cost, schedule and performance baselines, taking corrective actions as necessary. Independent validations should be completed by March 31, 2006."

USDA DR 3130-006 "Information Technology Earned Value Management" states:

"When an IT investment meets the thresholds that require the use of EVM, the agency will conduct an IBR in accordance with the Federal Acquisition Regulation. A copy of the IBR report will be sent to OCIO when completed."

The review team also incorporated IBR templates provided by the USDA FPA-Phase 2 Project Management Office; the EVM Guidelines Resolution Template and the EVM Documents Resolution Template. These templates were updated to include additional information and to break out the core components for each of the 32 ANSI EVMS compliance criteria as developed in the NDIA EVMS Intent Guide. These documents focus on the programs compliance with the 32 ANSI criteria, rather than on the reasonableness of the program baseline.

Finally, the review team used the USDA/OCIO document entitled "Independent/Integrated Baseline Review Checklist" as a source document for IBR preparation, implementation, and reporting suggestions. The final IBR package consists of the following documents:

- FPA-2 Independent Baseline Review, Final Report, March 29, 2006
- Attachment 1: Investment IBR Participant List
- Attachment 2: FPA-2 USDA Required Documentation List
- Attachment 3: FPA-2 EVMS Compliance Review

- FPA-2 IBR Closure Letter

2. Purpose

According to the Program Manager's Guide to the Integrated Baseline Review Process (The Guide), the purpose of an integrated baseline review is to "provide a mutual understanding of risks inherent in contractors' performance plans and underlying management control systems.[1]"

The Guide also states that an IBR should confirm compliance with the following business rules:

- The technical scope of work is fully included and consistent with authorizing documents;
- Key schedule milestones are identified
- Supporting schedules reflect a logical flow to accomplish the technical work scope
- Resources are adequate and available for the assigned tasks
- Tasks are planned and can be measured objectively, relative to technical progress
- Underlying performance measurement baseline rationales are reasonable; and
- Managers have appropriately implemented required management processes.[2]

3. Scope

The SAIC CPIC Center of Excellence was contacted by USDA Forest Service in order to conduct an Integrated Baseline Review that meets the requirements of the USDA OCIO. The reviewed program was the Fire and Aviation Management – Fire Program Analysis System – Phase 2. The IBR was conducted March 9 and 10, 2006 from the point of view of the government as the project integrator, and the contractor teams as sub-elements of the project. The major deliverables of the program are being provided by IBM and the government, with SAIC, Commonthread and TekSystems contributing smaller, level of effort activities. As a result the primary focus of the IBR was on reviewing the work breakdown structure activities of IBM and the federal government. SAIC developed an approach that included document review, interviews with contractor control account managers, interviews with the program management office, and review of the Exhibit 300 information to help

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[1] Office of the Undersecretary of Defense, The Program Manager's Guide to the Integrated Baseline Review Process, June 2003, p. 1.
[2] Ibid, p. 18.

determine the program's level of compliance with the 32 ANSI criteria. The SAIC IBR team members were:

Ellen Walsh, Senior Financial Analyst
Ms. Walsh is responsible for team management, data traces, document review, ANSI Compliance, EVM system review and program management review.

Eric Christoph, Senior Consultant
Mr. Christoph is responsible for system development lifecycle and software development review, data traces, and EVM system review.

The FPA-2 project management team provided an extensive list of documents to the reviewers, including several that were in addition to those recommended by USDA policy. To review the USDA document checklist please see Attachment 2 to this report. Documents that were reviewed include the following:

- Exhibit 300
- Statement of Work (project & contracts)
- Work Breakdown Structure (WBS) And WBS Dictionary
- Integrated Master Plan/Master Schedule
- Organizational Breakdown Structure (don't really have this)
- Control Account Plan
- Project plan
- Responsibility Assignment Matrix
- Risk management plan
- Work authorization documents
- Earned value system description
- Scope statement
- Project charter
- Communication plan
- Project Charter
- Requirements documentation
- Cost estimates and basis of estimates
- Integrated baseline review requirements documents
- Acquisition plan
- Resource allocation plan
- Change control plan
- Earned value reports
- Time phased budget plan (Performance measurement baseline)

The IBR began with several conference calls to gather a general understanding of the requirements and expectations for the IBR, and to discuss the documents and

information needed prior to interviews with the control account managers and project managers. These calls were followed by an extensive review of the project management and earned value documentation to gain a preliminary understanding of the programs alignment to the 32 ANSI criteria. Following this review, the team met with the program management office to interview the key managers and conduct data traces through the documentation.   The IBR team met with the following FPA2 team members:

Daniel Keller
Senior Program Manager
Forest Service / FPA2

Sudhir Rao
Senior Program Manager
IBM / FPA2

Emay Hardies
Financial Analyst
IBM / FPA2

Karen Beck
Project Manager
SAIC / FPA2

The FPA2 program management team provided extensive information to the IBR team prior to the on-site interviews. The documentation was thorough and provided good insight into the program's earned value management system, program management, and compliance with the ANSI requirements. The program staff were cooperative and knowledgeable about the program and earned value, and were well prepared for the interview process.

The review covered all of the areas in the work breakdown structure, but focused on the activities conducted by IBM and the federal government, since these comprise the most significant portion of the project. Data traces were made through the second level of the work breakdown structure.

4. Key Findings

Significant Positive Findings

- Significant effort has been made to create a WBS that allows for excellent visibility into the progress of the project and complies with the PMBOK and ANSI EVMS guidelines.

- The project manager has developed a strategy for dealing with the triple constraint of cost, scope, and schedule that explicitly identifies scope as the area most amenable to adjustment. This provides important guidance with respect to risk mitigation and other project planning efforts.
- The main development contractor, IBM Public Sector Group, utilizes an ANSI compliant EVMS system which covers a large portion of the project work and virtually all of the development (non-LOE) effort.
- The project team has made EVM and other best practices in management and software development a priority, and has made excellent progress to date with a limited planning staff. The deficiencies identified in this IBR can be attributed to learning curve issues and time constraints as opposed to negligence.

Significant Negative Findings

1. The current master schedule is not integrated with the intermediate (control account level) and lower schedules. In particular, start and end dates do not match for the same control account in the master schedule and the intermediate schedules. (See Recommendation a.)
2. The Performance Management Plan is still under development. (See Recommendation b.)
3. Performance measures and milestones for front end requirements and conceptual approaches are not defined, increasing the risk of going into development without sufficient knowledge of the system to be built. (See Recommendations b and c.)
4. The government program does not have an ANSI EVMS system to cover the entire effort, and faces significant hurdles in collecting data from project participants not under the direct control of the Forest Service. (See Recommendation e.)
5. Key earned value indices are being miscalculated due to the use of obligations instead of planned values from the Program WBS for BCWS. (See Recommendation d.)
6. Estimate at completion process does not take into account risk. (See Recommendation f).

5. Key Recommendations

a. Identify a Master Scheduler for the project responsible for creating and statusing maintaining the Integrated Master Schedule.
b. Develop performance measures for current WBS items, and include them in a Performance Plan that identifies key EV milestones, their weights, and acceptance criteria.
c. Create a Scope Statement that follows the PMBOK guidelines in order to help frame the conceptual phase of the project. Although a scope statement already exists, it is missing performance measures and milestones. PMBOK guidance also states that the scope statement should include (either directly or by reference to other documents): project objectives, scope description, requirements, boundaries, deliverables, acceptance criteria, constraints, assumptions, project organization, risks,

milestones, funding limitation, cost estimates, configuration management requirements, specifications, and approval requirements.[3]

d. Review and correct earned value calculations, particularly by using the planned value and not obligations as the basis for earned value calculations.

e. Find ways of bringing the non-IBM efforts, and particularly government efforts, under the control of an ANSI compliant EVMS.

f. Tie the risk management process to estimates at completion in order to quantify the impact of risks and make risk analysis more meaningful.

6. Conclusion

The effort to date in complying with the EVMS mandate reflects a major commitment on the part of the project team. FPA-2 has done a truly impressive amount of work with a very small staff, and is closer to being compliant with the ANSI standard than many projects this review team has seen with much larger staffs and project control budgets. Although this is in large part due to the use of the fully compliant IBM EVMS system for the major development efforts, the Forest Service project team has implemented many of the standard EVMS controls across the entire program, and has planned the effort in way that takes maximum advantage of the existing contractor systems. Without major investments in project management tools and upgrades to the Forest Service core financial system it will be difficult to improve the compliance rating by a significant amount.

One area that does lend itself to improvement is in tying risk management to the development of estimates at completion (EAC). There is a significant risk that requirements will not be defined in time to build the FPA-2 system, and the near term performance management plan should be constructed to mitigate that risk. In addition to integrating risk management and EAC development, a focus on determining measurable progress indicators in the "fuzzy" conceptual and requirements phases prior to the July 2007 milestone would provide a means to mitigate the risk of having large numbers of undetermined requirements at construction time.

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[3] *A Guide to the Project Management Body of Knowledge (PMBOK Guide) Third Edition*, Project Management Institute, 2004, pp. 110 – 112.