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ASSESSMENT REPORT
09-12

FEDERAL DIGITAL SYSTEM (FDSYS) INDEPENDENT VERIFICATION AND VALIDATION – SEVENTH QUARTER REPORT ON RISK MANAGEMENT, ISSUES, AND TRACEABILITY

September 30, 2009

MEMORANDUM

U.S. GOVERNMENT PRINTING OFFICE

OFFICE OF INSPECTOR GENERAL

Date

September 30, 2009

To

Chief Information Officer

From

Assistant Inspector General for Audits and Inspections

Subject

Federal Digital System (FDsys) Independent Verification and Validation (IV&V) – Seventh Quarter Report on Risk Management, Issues, and Traceability
Report Number 09-12

The Government Printing Office (GPO) Office of Inspector General (OIG) is conducting independent verification and validation (IV&V) of GPO's Federal Digital System (FDsys)[1] implementation. The OIG contracted with American Systems[2] to conduct IV&V for the public release of FDsys.[3] As part of its contract with the OIG, American Systems is assessing the state of program management, technical and testing plans and other efforts related to the rollout of Release 1 (formerly R1C2). American Systems is required by the contract to issue to the OIG a quarterly Risk Management, Issues, and Traceability Report, providing observations and recommendations on the program's technical, schedule, and cost risks as well as requirements traceability of those risks and the effectiveness of the program management processes in controlling risk avoidance. Additionally, at the end of each FDsys release phase, American Systems is required to issue a release phase summary program management report that addresses delivery of the technical baseline per the FDsys Master Program Schedule and the risks that affect the schedule's critical path to the next phase.

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[1]The FDsys program is a multimillion dollar effort that GPO is funding and managing to modernize the GPO information collection, processing, and dissemination capabilities it performs for the three branches of the Federal Government.
[2]American Systems, located in Chantilly, Virginia, is a large information technology company with significant experience in the realm of IV&V for Federal civilian and Defense agencies, including the Department of State, the Navy, and the U.S. Agency for International Development.
[3]American Systems IV&V methodology is referenced to the framework established by the Institute of Electrical and Electronic Engineers (IEEE) Standard 1012-2004, the IEEE Standard for Software Verification and Validation.

The enclosed report is American Systems' quarterly report for the period January 1, 2009 to May 8, 2009. We extended the period covered by this quarterly to include the completion and deployment of FDsys Release 1. Section 5 of the report contains recommendations designed to strengthen FDsys program management, particularly for future FDsys releases. Management concurred with twenty one recommendations, partially concurred with three, and nonconcurred with one. We consider the actions taken or proposed by management responsive to each of the twenty one recommendations as well as the recommendations management partially concurred with.

Twenty two recommendations are resolved and will remain open until corrective actions have been taken and IV&V has verified the actions. We are closing two recommendations that management partially concurred with. The rationale behind our decision to close these two recommendations is provided in the "Evaluation of Management's Response" section that follows each recommendation in Section 5 of the report. Management nonconcurred with one recommendation (number 20). We believe that additional clarification is needed with respect to this recommendation and will follow up with management. As a result, this recommendation is unresolved and open. The status of each recommendation upon issuance of this report is included in Appendix B. The final report distribution is in Appendix C.

In the response to this report (Appendix A), management expressed concern regarding the time period of performance evaluated and report availability to the Program. The OIG did provide an advance copy of the report to the Chief Information Officer (CIO) on June 3, 2009. Additionally, the task reports that are combined into this 7th quarterly report were provided to the CIO in a timely manner and in many instances, we briefed the CIO on those reports (see enclosed report for a summary of task reports provided to the CIO). Therefore, we believe the information contained in the 7th quarterly was communicated to management in a timely manner. Subsequently, we have agreed with the CIO to revise our future report process by requesting a management response to each task report as the reports are generated by the IV&V team. The report responses will then be incorporated into the quarterly report.

If you have questions concerning this report or the IV&V process, please contact Mr. Brent Melson, Deputy Assistant Inspector General for Audits and Inspections at (202) 512-2037, or me at (202) 512-2009.

Kevin J. Carson
Assistant Inspector General for Audits and Inspections

Enclosure

cc:
Chief Acquisition Officer
Chief Management Officer
Chief Technology Officer

Enclosure

IV&V RISK MANAGEMENT, ISSUES, AND TRACEABILITY REPORT	
TO:	COTR, Brent Melson
FROM:	IV&V, David Harold
IV&V OF:	Quarterly Report (Revised Final – Document Number 01-073)
SUBJECT:	January 1 – May 8, 2009 Quarterly Report
DATE:	June 11, 2009
CC:	Dan Rose, Jon Valett, John Best, Chris Parr, Marc LoGalbo, Shawn O'Rourke

Background:

This report presents the critical technical, schedule, and cost risks identified for the Government Printing Office (GPO) Federal Digital System (FDsys) Program. Specifically, it provides a high-level overview of the key risks and issues that Independent Verification & Validation (IV&V) has identified within the last quarter. This report also addresses IV&V assessments covering FDsys security and, the state of program activities required for deployment that were performed over this same time period.

This is the seventh IV&V quarterly report and covers the period from January 1, 2009 to May 8, 2009. In agreement with the Office of the Inspector General (OIG), we expanded the period covered by this quarterly report to include the completion and deployment of FDsys Release 1 (formerly R1C2), by the FDsys Program Management Office (PMO). This report includes information taken from the following American Systems reports:

Name of IV&V Task Report	IV&V Submittal to the OIG	Submitted/Briefed to CIO and PMO	CIO Submittal/Briefing Date
FDsys Implementation Phase Risk Analysis	January 27, 2009	Submitted	January 27, 2009
FDsys Training and Documentation	March 19, 2009	Submitted	March 19, 2009
FDsys Transition Plans	March 27, 2009	Briefed	April 6, 2009
FDsys As-Built Documentation	April 9, 2009	Submitted	April 9, 2009
FDsys Security Analysis	April 24, 2009	Awaiting	Awaiting
FDsys Test Report	April 30, 2009	Briefed	May 7, 2009
FDsys Implementation Traceability Report	May 8, 2009	Submitted	May 13, 2009

Over the last quarter the FDsys program has made some significant progress. The Search and Access subsystem, containing eight (8) of the fifty-five (55) GPO Access Collections, was released as a public beta version in January 2009. The Content Management subsystem, supporting the Internal Service Provider, Congressional Publishing Specialist, Preservation Specialist, and Report user roles, was released in late March 2009. Additional observations over this period are as follows:

- The FDsys hardware design and installation group helped produce a number of documents related to the deployment and sustainment of FDsys with the *Transition to Operations Plan*, *Users Operations Manual*, and *Building the FDsys Environment* document. The group also produced numerous drawings documenting the Production instance and is also working on Backup and Recovery processes;
- The risk program continues to add new risks and, review and evaluate risk handling plans for previously identified risks; however, major risks, e.g., aggressive schedule, are being rejected and thus not monitored by the Risk Review Board. Additionally, risks that have now become problems are also reviewed and discussed;
- Configuration management activities are occurring. The Configuration Control Board (CCB) and Software CCB have been meeting to review potential changes that may affect the FDsys Program. The CCB met consistently on a weekly basis. The CCB process could be improved if meetings began on time and, required attendees would attend the meeting and be prepared to give a current status of Program Tracking Reports (PTRs) and baseline documents. IV&V did not attend the daily Software CCB meetings but received e-mails as to their occurrence;
- Individual training plans for the various user communities were developed; and
- The FDsys requirements database (i.e., stored in Caliber) continues to be a "work in progress." The structure, content, use, and maintenance (e.g., configuration control) of this database are not formally defined in any document (e.g., an approved Requirements Management Plan). As a result, it is not clear how the system requirements (and their associated derived requirements) that have been implemented in Release 1 are documented in the database.

1. Technical Risks Identified

During the last quarter, numerous technical risks were identified as a result of IV&V Task Reports. These technical risks, as excerpted from those reports, are provided below.

Risk Program:
A Risk Program has been implemented on the FDsys Program. Risk Review Board meetings were being conducted on a bi-weekly basis prior to the deployment of Release 1 but have been suspended since that time. Though these meetings were being conducted, IV&V noted a number of risks which encumber the overall risk process:

- Risks that would seem to be of a higher and more urgent priority, e.g., FDsys Program working to an overly aggressive schedule, were often not submitted to the Risk Review Board for consideration. Risks which have not been

submitted cannot be tracked or mitigated, resulting in these risks manifesting themselves as problems in the implemented system. It is unclear to IV&V whether these risks are not submitted because they have not been recognized as risks by the PMO, or whether there are other factors involved (see next bullet);

- When high priority risks (e.g., aggressive schedule) were submitted to the Risk Review Board, they were sometimes rejected. It is important that the risk management process remain as independent from other considerations as possible, to permit even sensitive risks to be tracked. Lacking this ability, major risks could go untracked, unaddressed, and ultimately become problems with the implemented system;
- Some steps contained within the Risk Handling Plans are sometimes inadequate to mitigate the risks, resulting in the risks becoming problems. An example is the Risk Handling Plan that was generated to mitigate Risk 086. The risk description states "DMD/Parser Development is estimated to take a significant amount of time, but the actual time may take longer." The Risk Handling Plan indicates that to mitigate this risk, the FDsys Program should "Monitor DMD and parser development for any issues that may push the schedule."
- Risks and Risk Handling Plans are not being updated in a timely manner, resulting in obsolete information which does not address the current state of risks to the program;
- The Excel spreadsheet currently functioning as a risk database is cumbersome and incomplete, making its use difficult, and introducing the possibility for errors or missing information. Missing information in the risk database reduces it effectiveness for recording risks and problems; and
- Lack of clarity and specificity in the *Risk Management Plan (RMP)* (some of which are stated in prior sections of that report) could make implementation of the *RMP* directives difficult.

Training and Documentation:

The IV&V evaluation noted that the FDsys Training Program had mixed results. While the training presentations were well prepared and productive, the *Documentation & Training Plan* requires updating. The IV&V evaluation resulted in the following risks:

- Lack of specific exercises for the various user roles could result in users not fully understanding how to use the system;
- Lack of emphasis on how each user will specifically use the system in their work might result in incomplete training, and the users not understanding how to use the system in their daily work; and
- Although the *Documentation & Training Plan (D&TP)* states that call center scripting will be created for FDsys, there has been no indication that it has been created, except for some very basic Frequently Asked Questions (FAQs).

As stated in the FDsys Sales Contact Center PowerPoint training presentation of December 18, 2008, if the call center agent can't answer the question, it is routed to Library Services and Content Management using the Rightnow™ tool. If Library Services is unable to answer the question, it is routed to the PMO. Also, FDsys will not have PMO 24 hours a day, 7 days a week phone support for the foreseeable future. It is possible for the public to contact the call center seeking help with FDsys during non-PMO-support hours and not receive the required assistance.

Transition Plans:
There are several significant technical risks associated with the IV&V observations and evaluation of FDsys operations documentation. The lack of comprehensive operations and support, and maintenance documentation may lead to the following consequences:

- The maintainability of the system is potentially compromised if operations documentation including maintenance procedures are unavailable;
- The availability of the system (for the user community) is compromised without sufficient spares on hand when critical components fail; and
- Given that development for Release 2 and Release 3 of FDsys will continue after deployment of FDsys Release 1, commingling of Program Tracking Reports (PTRs) for the deployed and development systems may occur which could result in accidental changes being made on the wrong instance.

As-Built Design Documentation:
The lack of detailed documentation presented in the *System Design Document (SDD)* (March 2009) manifests itself in the following risk:

- Future development and maintenance of FDsys is at risk if a team other than the one that built the original system is responsible for future releases and updates. If key technical people leave the program, or different contractors are used to develop or maintain the system, there may not be sufficient documentation to ease that transition. The risk is one of increased cost and schedule due to insufficient documentation.

Security:
The IV&V findings suggest that the FDsys System Security Plan has been modestly improved since IV&V's previous review, but still lacks any level of security control details required to enable FDsys to receive an Approval to Operate (ATO). IV&V does agree with the decision to accredit the system under a six (6) month Interim Approval to Operate (IATO), but has serious concerns whether the system will have documented security controls in place and undergo a thorough security assessment within the period of the IATO.

During this quarter, American Systems submitted a draft IV&V Security Analysis report to the OIG for review. American Systems reviewed the FDsys security accreditation and concluded that not all requirements of the Federal Information Security Management Act (FISMA) were met. As a Legislative branch agency, GPO is not required to adhere to FISMA. However the Agency has chosen to adhere to the principles of FISMA because it is a Federal government best practice. At the end of this quarter, the OIG was reviewing the draft report. As with the previous IV&V Security Analysis report, the OIG plans to issue the report and four recommendations to improve the Security process separate from the IV&V Quarterly Report.

Test Results:

IV&V's review and evaluation of the System and Integration Test (SIT) effort and the User Acceptance Test (UAT) resulted in a number of significant risks. Analyses and the risk spawned by the inadequacies of these efforts are provided:

- IV&V's analysis determined that 546 (71%) of the system requirements (RDs) included in the System and Integration Test (SIT) effort were not demonstrated by the Test Cases. Nearly one half (29 of 60) of the FDsys Features were not verified. According to the FDsys Test Team's results, 274 (36%) of the RDs did not "pass" during the SIT effort. These metrics do not mean that all these requirements are missing or incorrectly implemented. However, the metrics do indicate that Release 1 was not thoroughly tested; and, the PMO cannot be sure that all expected FDsys functionality works properly and meets the needs of the users. In addition, the possibility of unidentified errors impacting the future Releases of FDsys presents a substantial risk to the FDsys program as it moves forward. For example, as the use of FDsys increases, problems not found during formal testing will be encountered (if they exist). When found, some of these problems will need to be fixed. This will require resources and may add delays to the development of the next Release;
- The lack of complete and thorough verification of the system as a result of inadequate Test Cases is very problematic. The existing SIT Test Cases do not provide a solid foundation for demonstrating the FDsys RDs implemented in Release 1. As a result, they are not an effective tool to perform regression testing. In addition, the SIT Test Cases cannot be used as baseline documentation and/or guidance for future FDsys test efforts designed to verify system requirements. As such, the PMO has no detailed test documentation to establish Release 1 functionality and to support future FDsys development;
- The employed SIT test strategy focusing only on individual or small groups of requirements is cumbersome, redundant, and ineffective. Test Cases are too numerous and repetitive; and, implementation details that are not specifically identified as system requirements (e.g., Graphical User Interface (GUI) design/options, data validation, performance, error processing,

system administration functions) were overlooked or received only marginal testing. For example, the SIT effort did not address overall operation of FDsys (e.g., workflows, end-to-end processing); and, it did not conduct complete 508 Compliance testing[1] for all public user and internal user GUIs. As a result, the PMO has no assurance that the deployed system satisfies all the operational capabilities and business processes associated with the RDs implemented in Release 1;

- The User Acceptance Test (UAT) effort did not provide a realistic basis for "accepting" the system. The test scripts demonstrated basic operation of the system from the user's perspective. Feedback received from the participants resulted in the generation of numerous PTRs. However, the UAT Test Report indicates that some issues identified by the users were not documented by Program Tracking Reports (PTRs). Therefore, these issues may be lost or ignored; and important enhancements/fixes may not be implemented in future FDsys Releases; and
- The lack of a formal process by which UAT participants are provided the resolution to their comments is counter-productive. It is important that these users feel their inputs are used to improve/fix the system to better meet their needs. In addition, without the dissemination of the resolutions to all participants, users may not understand current system operation and the status of the associated issues. Without knowledge of how participant identified issues were resolved, participants may identify the same or similar issues in future UAT efforts.

Traceability:

There are several significant technical risks associated with the results of the IV&V evaluation. The lack of a complete and accurate mapping of requirements to test cases and test results leads to the following consequences:

- For many requirements, it is not possible to determine with certainty whether the requirements have been tested, and for those requirements that were tested, what the results of the tests were. Therefore, it is possible to deploy faulty and/or incomplete functionality in the system;
- The maintainability and availability of the system is adversely impacted. Testers won't know which tests failed, PTRs may not be written, and system

[1]In 1998, Congress amended the Rehabilitation Act to require Federal agencies to make their electronic and information technology accessible to people with disabilities. Inaccessible technology interferes with an individual's ability to obtain and use information quickly and easily. Section 508 was enacted to eliminate barriers in information technology, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals. The law applies to all Federal agencies when they develop, procure, maintain, or use electronic and information technology. 508 Compliance testing should be performed to ensure FDsys is compliant with Section 508.

problems may go undetected and uncorrected; manifesting themselves in later FDsys Releases;

- The final acceptance of each Release should be dependent upon the validation of all the requirements pertaining to the functionality claimed for the release. If validation cannot be demonstrated, acceptance of the release should be withheld until validation can be demonstrated. The same holds true for the entire system; and
- It is impossible to rely upon the existing Requirements Verification Traceability Matrix (RVTM) to determine which requirements were actually successfully implemented in the deployed release. There are many exceptions in the "Notes" field (statements like requirements "pushed out to R1C3" or "unable to test; requirement not in R1C2").

2. Schedule Risks Identified

Deployment of the Search and Access subsystem occurred in January 2009 and the Content Management subsystem in March 2009. As a result, there are no remaining schedule risks for Release 1; however, future FDsys releases may be impacted if the technical issues identified in ***Section 1*** of this report are not resolved. A number of those issues, e.g., failure of the Release 1 System Integration Testing to adequately test the requirements, may result in unidentified errors being found in subsequent releases. Fixing these errors will not only require resources but also may add delays to the development and deployment of the next Release.

3. Cost Risks Identified

There are inherent cost risks associated with the technical and schedule risks; however, due to the deployment of FDsys Release 1, there are no further cost risks (for this release). Future FDsys releases could be impacted by significant cost risk if the technical risks described in ***Section 1*** of this report are not addressed.

4. Analyses Performed by IV&V

The sections below provide a high level synopsis of the IV&V evaluations and task reports completed over the last quarter. Additional details can be found in the individual reports identified in the ***Background section*** above.

Risk Program Analysis:
IV&V reviewed the Risk Management Program and *Risk Management Plan* version 3.2. The goal of this Task Report was to review and evaluate the effectiveness of the risk management process and its implementation, assess the quality of the Risk Management Plan, and to identify areas for improvement.

The evaluation results suggest that the effectiveness of the risk program at identifying, tracking, and avoiding risks is questionable since new risks were not accepted after September 2008. In addition, a detailed review of the open risks and Risk Handling Plans indicate that many of these have not been updated since mid-2008, and are totally or partially obsolete.

The processes as implemented by the Risk Review Board are mostly in compliance with those stated in the RMP; however, there are several areas in which RMP 3.2 is not being followed. One such example is that the risk management tasks are not being tracked in the Master Integrated Schedule.

The quality of the RMP could be improved, as some areas lack either sufficient detail or clarity. In addition, the RMP process specified is sometimes not as rigorous as best industry standards would indicate, e.g., there is no minimum attendance requirement at RRB meetings to constitute a quorum. Another example is that there is no guidance to the RRB on what factors should be considered to base approval or disapproval of Risk Handling Plans.

FDsys Training and Documentation Analysis:
IV&V performed a review of training and user documentation in February 2009. The evaluation also included IV&V observations from attendance during actual training sessions. The goal of this Task Report was to review and evaluate the following, and to provide recommendations for improvements:

- Quality of the Documentation and Training Plan (D&TP);
- Implementation of the D&TP;
- Quality of the user manuals; and
- Quality of the training sessions and material.

IV&V findings at that time indicated that the *D&TP* was out-of-date and lacked detail. For example, the call center scripts and Frequently Asked Questions sections of that plan were not provided.

FDsys Transition Plans:
IV&V reviewed the FDsys plans that will be implemented for the sustainment of the deployed FDsys. In general, the *Transition to Operations Plan*, *User Operations Plan*, *Building the FDsys Environment* document, *Site Preparation and Installation Plan*, hardware drawings and other documentation provide a wealth of good and useful information; however, the documents lack specific information in regard to the physical maintenance of FDsys. Additionally, the documents lack cohesion, i.e., the information is spread amongst numerous documents rather than being part of an all inclusive document.

The transition documentation did not specify and define a sparing strategy that will be required when critical components fail. Defining and documenting a sparing

strategy and then implementing that strategy are essential for any deployed system in order to reduce unscheduled downtime and lessen the impact on the user community when the system is unavailable.

In addition, the FDsys program has not developed a number of key processes that will be required for the sustainment of the deployed FDsys; thus risking the probability of extended downtime of the system. The processes that need to be developed include replacement procedures that will be required when components fail; rollback procedures that describe the process to be used when software releases have to be recalled; and the processes that will be required for the coordination of the Operational Change Control Board (OCCB) and the Program Configuration Control Board (CCB). The OCCB is a GPO enterprise-wide CCB.

FDsys As-Built Documentation Analysis:
IV&V reviewed the updated detailed design documentation, specifically, the *FDsys System Design Document (SDD*) for Release 1C.2 (R1C2). As part of this review, IV&V evaluated both individually and collectively, the six (6) volumes that together comprise the overall FDsys design and comprise the "As-Built" documentation for FDsys for R1C2. Note that the *Data Management Definition (DMD)* documents were not part of the IV&V review. The goal of the FDsys SDD evaluation was to determine if the SDD was updated to reflect the design of the completed system, if the documentation is sufficient for system maintenance, and if it represents a good starting point for design of the next release.

Overall, the SDD still lacks sufficient detail to completely describe the as-built FDsys for R1C2. The SDD has been updated to some extent to reflect the design of the current system; however, the level of detail is not sufficient for someone unfamiliar with the system to perform system maintenance. Additionally, the SDD is reasonably sufficient as a starting point for the next release's design, given that this release will likely be designed by the same personnel who developed the deployed release; however, the document lacks the details that would be required for a new design team to take over the design of the upcoming release.

FDsys Test Results Analysis:
IV&V reviewed the results of the formal testing conducted for the GPO FDsys Release 1C.2 (now called Release 1). These results, provided by the FDsys PMO, included two test efforts executed prior to system deployment: System Integration and Test (SIT) and UAT. In particular, IV&V evaluated the SIT Test Cases that were used to demonstrate that the system requirements (RDs[2]) contained in the *FDsys Requirements Document* were incorporated into Release 1, and reviewed the final Test Report for the UAT effort completed for this Release.

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[2]System Requirements contained within the FDsys Requirements Document are referred to as RDs. RDs are so named to distinguish them from Derived Requirements (DRs).

The SIT effort was (by far) the most critical component of the test program for FDsys Release 1. The goal of this effort was clear: to ensure that FDsys satisfied its requirements, both in function and in implementation. Unfortunately, the SIT effort did not achieve this goal. The Test Cases and results fully or partially demonstrated only a subset (approximately 25%) of the Release 1 RDs included in the SIT Test Cases. In the majority of these tests, the SIT contained few details and almost no descriptive information; included only generic steps/results; and, demonstrated the scope/intent of the requirements in a minimal fashion, or did not address the requirements at all.

The UAT effort and the informal public Beta testing were more general in nature. Their goal was to demonstrate basic operations, functions, and acceptable qualities to a relatively small set of users. Following each PMO led training session, internal users were asked to evaluate FDsys by conducting several test scripts related to the functionality they were expected to utilize. Likewise, selected external users performed unscripted testing to evaluate the public access capabilities of FDsys. These test efforts were not designed to verify any system requirements. Participants provided feedback regarding their impressions of the system's operations; recommendations for improvements; and, any problems encountered. The feedback obtained resulted in the generation of numerous PTRs for resolution in Release 1 or for possible resolution in future Releases. The PMO produced the UAT Test Report to document the UAT effort. Although comments from the Beta testers were collected, the PMO did not generate a formal report for this effort. Due to its informality, the Beta test effort was not evaluated by IV&V.

FDsys Traceability Analysis:
IV&V conducted an evaluation of the tracing of the requirements allocated to FDsys Release 1C.2 (now referred to as Release 1) to test results. Specifically, IV&V evaluated the accuracy of the FDsys Release 1 Requirement Verification Traceability Matrix (RVTM) by comparing it to the System Integration and Test (SIT) test case files, to identify discrepancies between the RVTM and the test cases. The purpose of this review was to verify that every requirement (i.e., RDs) included in the RVTM had been tested, that a reason was provided if a requirement had not been tested, and to determine whether the RD was verified by the test. Derived Requirements (DRs – additional requirements created by the Program Management Office (PMO) to provide clarification to the actual requirements) were not included in the IV&V traceability analysis.

The results of the IV&V evaluation of Release 1 traceability reflects an undisciplined testing approach which has prevailed throughout the Release 1 development process. The RVTM and test case files do not match (numerous inconsistencies were identified during the evaluation), and the RVTM itself contains internal inconsistencies. Notes included in the RVTM and in the test cases do not provide sufficient information as to the reasons why some actions were taken. The RVTM as provided to IV&V will be of limited value in ascertaining the true status of testing of

the Release 1 requirements, as it lacks detail and has been demonstrated to contain inconsistencies.

5. Recommendations

The IV&V recommendations are provided below. These encompass the recommendations previously included in the IV&V Task Reports referenced in the *Background* section of this report and as discussed herein.

Risk Program
The Chief Information Officer and Program Management Office should require that:

1) Rigor in the identification and submission of important risks be increased, to include:

    - Actively soliciting risks from the entire team
    - Soliciting risks shortly before any release of the system
    - Review IV&V reports to identify risks; and
    - Tracking schedule and other important risks
        - When determining whether to close a risk / problem or keep it open, be sure that the root cause of the risk / problem has been addressed, and not just that the steps in the handling plan have been completed;
        - Update risks and Risk Handing Plans in a timely manner; and
        - Ensure that all RRB members, as well as risk submitters, are present at the meetings to the extent possible;

Management's Response. Partially concur. The FDsys management team disagrees that sufficient rigor is lacking. The management team believes that the first four bullets under this recommendation are occurring. Management stated that risks have been solicited from the entire team and risks have been entered after September 2008, with new risks incorporated into the risk process. Management also disagreed that major risks (e.g. the aggressive schedule) are not being monitored because they are being rejected and thus not entering the risk process. It is the position of the FDsys team that the program schedule is not a risk; rather it is a program constraint or boundary condition. The schedule as a constraint or boundary would create specific risks that cold then be identified and mitigated. Management agreed that more timely updates could occur and that attendance at the meetings of key RRB members and submitters could be improved. The FDsys management team will emphasize the importance of the RRP process and ensure more discipline within the team.

Evaluation of Management's Response. American Systems agrees that while the schedule by itself is not a risk, not meeting milestone dates in the schedule could promulgate risks. Because American Systems and the FDsys management team

agree in principle, we are closing this recommendation upon issuance of the final report.

2) The current *Risk Management Plan (RMP)* should be updated with additional clarity and specificity to the next version in the areas identified in this report, as well as searching for other areas where the guidance could be made more specific (e.g., provide direction for tracking of problems vs. risks). Consideration should also be given to:

    - Establishing a minimum attendance requirement to constitute a quorum at RRB meetings;
    - Clarifying the RMP for approval / disapproval of Risk Handling Plans; and
    - Clarifying the RMP for tracking and handling of problems (vs. risks).

Management's Response. Concur. Management agrees in principle. The RMP has provided good general guidance, but the areas identified should be formalized and added to the RMP. The Director of Programs, Strategy and Technology will direct the risk manager to update the plan according to the IV&V recommendations.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

Documentation and Training:
The Chief Information Officer and Program Management Office should require that:

3) The current *User Manuals* be updated with additional clarity and specificity to the next version in the areas identified in this report to:

    - Contain all of the features specified in Section 4 of the *Documentation and Training Plan (D&TP)*.
    - Reflect changes to the system resulting from correction of system problems.
    - Contain more narrative step-by-step instructions specific to the way a user will need to use the system for performing tasks assigned to each specific user role. Add business context detailing *why* the user is performing each step; explain what it is intended to accomplish from a business point-of-view.
    - Update or create the existing and future internal user manuals; using the Search manual as a model. The "Description / Procedure / Examples" structure seems more user friendly than that used for the other manuals.

Management's Response. Concur. Management agrees that some updates to the user manuals are required and will be made at appropriate times.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

4) Training sessions and material are updated to include:

- Adding user exercises specific to each user role to the training sessions.
- Updating training material if necessary to reflect changes to the system resulting from correction of system problems.
- Analyzing and correcting problems found with training machines to include the reasons why the system works on some machines and not others.
- Reducing the amount of background material (i.e., descriptions of the OAIS model, the history of communication, etc.) and devote this time to more information specific to the user role being trained.
- Having the trainer check with the trainees periodically to make sure none of them are stuck or lost. IV&V observed that some trainees are not willing to interrupt the class to be assisted in catching up.

Management's Response. Partially concur. Management indicated that user exercises for different types of users were conducted in the training sessions. The team agrees with the remainder of the recommendation and has either taken corrective action or plans to do so.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

5) The Documentation and Training Plan be updated to include:

- Considering whether it is worth the effort to update to and finalize the D&TP at this point in the program. If it is not desirable to update this version, use the lessons learned from this release to create a better plan for the next one.

Management's Response. Concur. Management agrees and will update and improve the training plan for the next release.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but

undispositioned, and will remain open for reporting purposes until corrective actions are completed.

6) Other recommendations that should be considered include:

- Correcting system problems identified during training and testing, updating user manuals, and making sure that any significant system changes are communicated to the users that have already been trained. If changes are major, retraining users should be considered;
- Creating formal call center scripting as prescribed in the D&TP; and
- Continuing the update of Frequently Asked Questions (FAQs) as they become apparent.

Management's Response. Partially concur. Management's actions are responsive to the recommendation. Management indicated that (1) changes to the system are being communicated back to the users, (2) formal call center scripts were created and delivered to the contact center, and (3) FAQs have been added to RightNow CRM, which is managed by Library Services.

Evaluation of Management's Response. American Systems is unaware of the mechanism being used to communicate changes and management's response does not reference the mechanism. American Systems has no way of verifying delivery of the call center scripts and the FAQs. Because the FDsys management team agrees in principle, we are closing this recommendation upon issuance of the final report.

Transition Plans:
To help ensure the sustainment of the deployed FDsys, the Chief Information Officer and Program Management Office should require the:

7) Development and publishing (i.e., document) of a schedule for routine/preventive maintenance activities that must be performed on FDsys;

Management's Response. Concur. Management agrees that a Maintenance Plan is a sound recommendation and work on this plan has begun. As production operations are transitioned from the PMO to the IT&S Operations group, the formalization of the schedules and processes for maintenance will be established and documented in the plan.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

8) Development of routine/preventive maintenance processes and procedures and have them inserted into current FDsys documentation, e.g., in the *FDsys Transition to Operations Plan*;

Management's Response. Concur. See response to #7 above.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

9) Development of replacement processes and procedures that will have to be implemented when the critical components (that are currently identified in the *FDsys Transition to Operations Plan*) fail and insert them into current FDsys documentation, e.g., in the *FDsys Transition to Operations Plan* or develop a specific User's Manual dedicated to maintenance activities;

Management's Response. Concur. See response to #7 above.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

10) Development of both start-up and shut-down processes when maintenance activities, including software deployment or rollback occur; this should also involve the system logs to capture when the system is shut down; when it is brought back online; and what state the system comes back up in;

Management's Response. Concur. Management indicated that the FDsys Program team has developed shut-down scripts to enable a graceful system shutdown. These scripts will be provided to IT&S Operations for incorporation into the overall maintenance plan.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and the IV&V team verifies that the scripts have been incorporated into the maintenance plan.

11) Identification and documenting of the spares strategy that will implemented for FDsys in the event a critical component of the FDsys fails;

Management's Response. Concur. Management indicated that a spares strategy will be incorporated into the overall maintenance plan.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and the IV&V team verifies that the spares strategy has been incorporated into the maintenance plan.

12) Development of processes for backing out software changes and the re-constitution of the previous software build;

Management's Response. Concur. Management indicated that these processes have been established. GPO's IT Quality Director will ensure that this process is formally documented.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and the IV&V team verifies that adequate processes have been formally documented. We request that a copy of the documented process be provided to the IV&V team.

13) Development of a regression test to be performed when new software is deployed; when software is backed out; and when replacement of hardware occurs;

Management's Response. Concur. Management indicated that regression testing is occurring when software is backed out. GPO's IT Quality Director will ensure that the regression testing processes are documented in the overall master test plan.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and the IV&V team verifies that adequate regression testing processes have been formally documented. The IV&V team has not seen a regression test case or results of any regression testing. We request that a copy of the documented regression testing processes as well as regression test cases and results be provided to the IV&V team.

14) Development of plans, processes, and procedures for the Organization Configuration Control Board and describe how the current Program Level FDsys Configuration Control Board and the Organization Configuration Control Board are going to interoperate;

Management's Response. Concur. Management indicated that the IT Quality group has a documented plan for Configuration Control of FDsys. GPO's IT Quality Director will ensure that the IV&V contractor is given a copy of this document.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until the IV&V team is provided a copy of the Configuration Control plan and has reviewed it for adequacy.

15) Development of a single document that includes a maintenance plan. The maintenance plan can be developed by tailoring the guidelines/template provided in the IEEE Standard 1219-1998. Further, IEEE 12207.2-1997, Standard for Information Technology: Software life cycle processes – implementation considerations software products and, IEEE Standard 1219-1998, Annex C, provides information on the software maintenance process that can also be used as guidance; and

Management's Response. Concur. See response to #7 above.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

16) Identification and development of a maintenance strategy for resolving remaining Severity 2, 3, and 4 Program Tracking Reports (PTR).

Management's Response. Concur. Management indicated that the IT Quality group has a documented plan for resolving PTRs. GPO's IT Quality Director will ensure that the IV&V contractor is given a copy of this document.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until the IV&V team is provided a copy of the plan for resolving PTRs and has reviewed it for adequacy.

As-Built Design Documentation:
The Chief Information Officer and Program Management Office should require that:

17) The current *System Design Document (SDD)* be updated with additional clarity and specificity to the next version in the areas identified in this report including:

- Replacing all occurrences of "R1C2" with "Release 1";
- Insertion of details on the data migration plan and process;
- Specifying all Data Management Definitions (DMDs); and
- Insertion of a note to indicate that the integration of the Integrated Library Services (ILS) interface hasn't occurred but will that it is planned and will occur during one (1) of the Maintenance Releases.

Management's Response. Concur. Management indicated that the technical/system manager will be directed to update the design documentation.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

Test Results:
To help ensure the integrity of the testing program, the Chief Information Officer and Program Management Office should require the:

18) Development of a more reasonable test strategy for SIT efforts. This new strategy must also encompass the functionality implemented in Release 1 (especially the RDs not verified for this Release). When complete, the SIT Test Cases should thoroughly demonstrate all FDsys operational capabilities prior to the UAT effort. In addition, these Test Cases will provide a solid foundation for regression testing and the basis for testing future FDsys Releases. Specifically, this strategy should:

    - Address the system requirements in a more operational based approach;
    - Develop Test Cases designed to verify RDs (and their intent) in the context of the functionality they provide and the design of their implementation;
    - Demonstrate workflows, end-to-end processing, business processes, GUI operations, error messages, data validation processing, and logging events; and
    - Include concrete expected results in the Test Cases; and, ensure that they are repeatable.

Management's Response. Concur. Management agrees that a new or revised test strategy must be developed. The IT Quality Director will establish and document the test strategy and IV&V has reviewed the test strategy for adequacy.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

19) Development of a more comprehensive UAT effort that:

    - Addresses the functions available to each user (group) and how these functions are utilized within the business processes they perform;

- Includes preparation of detailed UAT test scripts that demonstrate all user capabilities, job related processing, error messages, and available user help; and
- Does not rely on or expect the UAT participants to verify system requirements (i.e., the SIT effort should do this); however, the UAT effort should clearly demonstrate that FDsys successfully performs the users' business processes.
    a. Ensure that the user training is consistent with the UAT test scripts.
    b. Allow time following the UAT effort to update FDsys to resolve important issues identified by the UAT participants.

Management's Response. Concur. Management agrees that a more comprehensive UAT is required. The IT Quality Director will establish and document a comprehensive UAT plan.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and IV&V has reviewed the UAT plan for adequacy.

20) Documents all issues identified by participants in the UAT effort using PTRs;

- These PTRs should be reviewed by the PMO's CCB process and the appropriate resolutions should be determined; and
- These resolutions should be disseminated to all the participants.

Management's Response. Nonconcur. Management does not agree and believes that their current process closely represents the process identified in American System's recommendation.

Evaluation of Management's Response. The intent of this recommendation is to ensure that the PMO documents all issues identified during UAT as PTRs and conveys the resolutions of these PTRs back to users. American Systems believes that the PMO may have misinterpreted this recommendation. This recommendation stems from the fact (noted in the report) that the UAT Test Report indicated that some issues were not documented as PTRs. The PMO correctly states that a PTR/CCB process exists. We will follow-up with management to clarify the intent of this recommendation. This recommendation is unresolved and undispositioned, and will remain open for reporting purposes.

21) Development of a summary analysis to be included in the UAT Test Report and a compilation of metrics regarding the PTRs generated as a result of the UAT effort.

Management's Response. Concur. See management's response to # 19 above.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and IV&V has reviewed the UAT plan for adequacy.

Traceability:
To support future FDsys Releases and improve the requirements traceability process, IV&V recommends that:

22) The RVTM contain all information pertinent to the verification of each RD being implemented in an FDsys Release. As a minimum, the RVTM must clearly identify the following:

- Each RD included in the Release and the Pass/Fail status for the RD;
- The Test Case(s) associated with each RD and the verification method used (e.g., demonstration); and
- The PTR(s) – if any – associated with each RD.

Management's Response. Concur. Management will require the IT Quality Director to establish and document the plan for RVTM.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed and IV&V has reviewed the RVTM plan for adequacy.

23) The RVTM is consistent, as of its issue date, with the information contained in the Caliber requirements database tool in use by the PMO. The Test Team should continually update the database with the most recent test information; and the RVTM should be generated/extracted from the database. IV&V did not compare the contents of the RVTM to the contents of Caliber for this report.

Management's Response. Concur. The IT Quality Director will direct the test team to ensure the RVTM as well as requirements database are consistent and up-to-date.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

24) Sufficient detail should be provided in any annotations in the RVTM (i.e., the current "Notes" column) to permit RVTM users to fully understand the meaning of the note, and the reasons for it.

Management's Response. Concur. The IT Quality Director will direct staff to link Caliber and Quality Center tools. Such linkages will ensure the required documentation is captured at the time of origination and then available to all parties.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

25) A more formal requirements tracking process be instituted for Release 2 and document how this process will be implemented on the FDsys Program in the Requirements Management Plan.

Management's Response. Concur. The IT Quality Director will direct staff to update its current requirements tracking process and incorporate it in the FDsys Requirements Management Plan.

Evaluation of Management's Response. Management's proposed actions are responsive to the recommendation. The recommendation is resolved but undispositioned, and will remain open for reporting purposes until corrective actions are completed.

U.S. GOVERNMENT PRINTING OFFICE
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MEMORANDUM

DATE: July 29, 2009

REPLY TO ATTN OF: Chief Information Officer

SUBJECT: Federal Digital System (FDsys) Independent Verification and Validation (IV&V) – Seventh Quarter Report on Risk Management, Issues, and Traceability

TO: Assistant Inspector General for Audits and Inspections

Thank you for the opportunity to respond to the draft Seventh Quarter report regarding GPO's Federal Digital System (FDsys).

Of continued concern is the lag time between the time period of performance evaluated and report availability to the Program. In this draft report there was a lag time of thirty-one (31) business days between the end of the period and the issuance of the report. In addition, this report covers Program activities dating back over six (6) months. The lag time coupled with the extreme variance between start and end of the reporting period ensures that this report contains inaccuracies and fails to adequately reflect the current state of the program. With no contextual information provided, this could lead a reader to conclude that FDsys is not being managed effectively and could have an unfair adverse impact on the program.

The program leadership team and I agree with some, but not all, of the IV&V observations and recommendations. Specifically, we agree that the overall testing of FDsys has been less effective than it could have been and that corrections are needed in the test program. However, we don't believe that the current report accurately depicts the testing that has occurred. In addition, we disagree that the operations and support documentation – as it currently exists - represents a key risk. Overall, the team remains confident that we are taking the necessary steps to ensure that FDsys is delivered successfully.

Please note that this response deals solely with the material and recommendations as presented in the document, but that in some cases we have grouped the recommendations to better provide context for our responses.

Recommendations:

Risk Program:

Recommendation #1: Rigor – The FDsys management team disagrees that sufficient rigor is lacking. The management team believes that the first four bullets under this recommendation are occurring – and have for quite some time - with the existing risk

process. Contrary to the report, risks have been solicited from the entire team and risks have been entered after September, 2008 with new risks incorporated into the risk process. Tracking schedules have been in place within the current process, and are applied to risks and problems to identify whether the risk has been mitigated / problem solved. Updates to the more urgent risks and problems are done first, and those risks are discussed with the RRB by the risk owner.

In addition, we strongly disagree with the report's implication that major risks (e.g., the aggressive schedule) are not being monitored because they are being rejected and thus not entering the risk process. All risks brought forward are considered and no risk is rejected due to sensitivity or other non-program related considerations. The "sensitive" risk cited by the report is the "aggressive program schedule". It is the position of the FDsys team that the program schedule is not a risk; rather it is a program constraint or boundary condition. As discussed in the risk review board meeting where this proposed risk was rejected, the schedule as a constraint or boundary would create specific risks that could then be identified and mitigated. The team was then encouraged to identify risks that manifest because of the schedule boundary or constraint.

We do agree that more timely updates could occur and that attendance at the meetings of key RRB members and submitters could be improved. The FDsys management team will emphasize the importance of the RRP process and ensure more discipline within the team.

Recommendation #2: Risk Management Plan (RMP) Update – The FDsys management team agrees in principle. The RMP has provided good general guidance, but the areas identified, while somewhat implicit in the day-to-day operations of RRB, should be formalized and added to the RMP. The Director of Programs, Strategy and Technology will direct the risk manager will be directed to update the plan as per the IV&V recommendations.

Documentation and Training:

The FDsys management team agrees that some updates are required; however, it is likely the updates will be for the future releases of FDsys.

Recommendation #3: Update Current User Manuals –

- Bullet 1: It is the position of the FDsys team that the only feature missing is the list of online video tutorials. At the time of publishing the user manuals, no video tutorials had been completed. Video tutorials have been created for public end users and will be added to the user manual for the next update. Video tutorials for other user groups are not planned.

- Bullet 2: Updates to the user manuals will be made as functionality for users' changes. This will likely occur based on fixes to the system as they are published.

- Bullet 3: Updates will be made when the cause of the errors are identified. After the causes and recommended fixes are determined, this information will be added to the user manuals.

- Bullet 4: This will be updated before the next training sessions are scheduled.

Recommendation #4: Update Training Materials –

- Bullet 1: User exercises for the different types of users were conducted in the training sessions.
- Bullet 2: Updates to the training materials will be made as functionality for users changes based on fixes to the system.
- Bullet 3: These were corrected.
- Bullet 4: This will be updated before the next training sessions are scheduled.
- Bullet 5: This will be incorporated.

Recommendation #5: Update Training Plan –

- Bullet 1: The training plan will be updated and improved for the next release.

Recommendation #6: Other –

- Bullet 1: Changes are communicated to the users who are currently using the system on an ongoing basis.
- Bullet 2: Formal call center scripts were created and delivered to the contact center.
- Bullet 3: FAQs have been added to RightNow CRM. This is managed by Library Services.

Transition Plans:

Overall this section seems to combine IT Quality/CM recommendations with Production Operations recommendations. We believe the section would be more understandable if it were broken into two components. We suggest two headers with the first being Production Operations and Maintenance with recommendations 7, 8, 9, 10, 11 and 15 grouped under this header. The second would be IT Quality: Test and Configuration Management for the remaining recommendations.

Production Operations and Maintenance

Recommendation #7 – 9; #15: Maintenance Processes and Plans – The FDsys management team agrees that a Maintenance Plan (based on IEEE 1219, 1998 or equivalent) is a sound recommendation and work on this plan has begun. As production operations are transitioned from the PMO to the IT&S Operations group, the formalization of the schedules and processes for maintenance will be established by this group and documented in the plan.

Recommendation #10: Start-up and Shut-down – The Program team has developed shut-down scripts to enable graceful system shutdown. These scripts will be provided to IT&S Operations for incorporation into the overall maintenance plan.

Recommendation #11: Spares Strategy – GPO's has established the HP Proliant DL 360 or 380 as the standard server for FDsys and the enterprise. In addition, GPO has standardized on NetApp storage and Cisco networking gear. All of these components are COTS and are readily available from multiple industry sources. In addition, GPO is in the process of establishing a 5 year agreement for servers, storage and networking

components under an IDIQ contract. This will ensure that a single, simple procurement vehicle is available to provide spares if necessary. This standardization also allows GPO to swap components between systems in the event of an emergency. We agree that this sparing strategy should be incorporated into the overall maintenance plan.

IT Quality: Test and Configuration Management

Recommendation #12: Backing Out Changes – The FDsys management team believes that processes have been established for backing out software changes and reconstituting previous software builds. Please refer to the build for the Budget collection in late May. Deployment issues with Documentum necessitated that the team redeploy a previous release in order to successfully deploy the budget. Working with the Program Office, GPO's IT Quality Director will ensure that this process is formally documented.

Recommendation #13: Regression Test (New Software) – The FDsys management team believes that regression testing is occurring when software is backed out. Working with the Program Office, GPO's IT Quality Director will ensure that these processes are documented in the overall master test plan.

Recommendation #14: Configuration Control – The IT Quality group has a documented plan for Configuration Control of FDsys. GPO's IT Quality Director will ensure that the IV&V contractor is given a copy of this document.

Recommendation #16: PTR Resolution (non-Sev 1) – The IT Quality group has a documented plan for resolving PTRs. GPO's IT Quality Director will ensure that these the IV&V contractor is given a copy of this document.

As-Built Design Documentation:

Recommendation #17: Update the SDD – The FDsys management team agrees with the specific bulleted recommendations. The overall technical/system manager will be directed to update the design documentation as per the IV&V recommendations.

Test Results:

The FDsys management team agrees in principle that the overall approach to test must be improved; however, we disagree with the implication that the SIT testing failed to meet its goal. Management recognizes the challenges experienced with testing FDsys and has repeatedly taken steps to ensure the success of the test program. Unfortunately, we have had difficulty finding resources (either contracted or Governmental) to successfully lead the test activity. Most recently, the Test Manager for IT Quality was terminated from Government employment due in part to FDsys test strategy not following recommendations made in the IV&V reports. The Director of IT Quality has now assumed responsibility for FDsys test until a replacement can be identified and hired.

Recommendation #18: Develop Reasonable Test Strategy – As indicated previously we agree that a new and/or revised test strategy must be developed. GPO's IT Quality Director will establish and document the test strategy.

Recommendation #19 - 21: Develop Comprehensive UAT – The FDsys management team agrees that a more comprehensive UAT is required. Working with the Program Office, GPO's IT Quality Director will establish and document a comprehensive UAT plan.

The FDsys team does not agree with recommendation #20. We believe that the process identified in this recommendation closely represents the current process. Issues discovered during Systems Integration and User Acceptance testing are documented as PTRs in ClearQuest. Each PTR is individually analyzed and dispositioned thru the CCB process. Fixes for each PTR are fully tested and approved prior to being incorporated into the software baseline and deployed to production.

UAT Test Report for the next release will include a compilation of metrics regarding the PTRs generated as a result of the UAT effort.

Traceability:

Recommendation #22: Update the RVTM – The FDsys management team believes that good progress has already been made and that the current RVTM demonstrates improved requirements-to-test case relationships. GPO's IT Quality Director will establish and document the plan for RVTM.

Recommendation #23: RVTM Consistency – We agree that greater consistency is required. GPO's IT Quality Director will direct the test team to ensure the RVTM as well as requirements' database are consistent and up-to-date.

Recommendation #24: RVTM Detail – We agree with the recommendation. GPO's IT Quality Director will direct staff to link Caliber and Quality Center tools. Such linkages will insure the required documentation is captured at the time of origination and then available to all parties. This will insure the current notes are available to developers, requirements' management staff, CM, and testers.

Recommendation #25: Formalize Requirements Tracking for Release 2 – We agree with the recommendation. GPO's IT Quality Director will direct staff to update its current requirements tracking process and incorporate it in the FDsys Requirements Management Plan.

MICHAEL L. WASH

Appendix B. Status of Recommendations

Recommendation No.	Resolved	Unresolved	Open/ECD*	Closed
1	X			09/30/09
2	X		TBD	
3	X		TBD	
4	X		TBD	
5	X		TBD	
6	X			09/30/09
7	X		TBD	
8	X		TBD	
9	X		TBD	
10	X		TBD	
11	X		TBD	
12	X		TBD	
13	X		TBD	
14	X		TBD	
15	X		TBD	
16	X		TBD	
17	X		TBD	
18	X		TBD	
19	X		TBD	
20		X	TBD	
21	X		TBD	
22	X		TBD	
23	X		TBD	
24	X		TBD	
25	X		TBD	

*Estimated Completion Date

Appendix C. Report Distribution

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