

**Improvements Are Needed for Subsequent
Integrated Financial System Testing**

March 2004

Reference Number: 2004-10-052

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DEPARTMENT OF THE TREASURY
WASHINGTON, D.C. 20220

INSPECTOR GENERAL
for TAX
ADMINISTRATION

March 1, 2004

MEMORANDUM FOR CHIEF FINANCIAL OFFICER

Gordon C. Milbourn III

FROM: Gordon C. Milbourn III
Acting Deputy Inspector General for Audit

SUBJECT: Final Audit Report - Improvements Are Needed for Subsequent
Integrated Financial System Testing (Audit # 200310027)

This report presents the limited results of our review of the Internal Revenue Service's (IRS) planned Integrated Financial System (IFS). The overall objective of this audit was to determine whether the IFS, when implemented, would function as intended to provide administrative financial management information that is essential for financial statement preparation as well as useful to IRS managers and others. Because the IRS rescheduled a material amount of the IFS testing, our original audit scope was significantly reduced. This report presents our audit observations and evaluations through the initial testing phase of the IFS.

The implementation of the proposed IFS will greatly affect the way the IRS records and reports both administrative and custodial accounting transactions. Further, this system represents a key element of the corrective actions being taken by the IRS to ensure its accounting system is in compliance with the Joint Financial Management Improvement Program's (JFMIP)¹ *Federal Financial Management System Requirements*² and provides accurate and timely financial information for management decision making.

In summary, the IFS project has experienced delays in system testing which have caused the IRS to reschedule the implementation of Release 1 from October 2003 to

¹ The JFMIP is a joint undertaking of the United States Department of the Treasury, the General Accounting Office, the Office of Management and Budget, and the Office of Personnel Management, working in cooperation with each other and other agencies to improve financial management practices in the Federal Government.

² The *Federal Financial Management System Requirements* are a series of publications prepared by the JFMIP as the key requirements that agency systems must meet to be substantially compliant with generally accepted accounting principles for the Federal Government.

April 2004.³ Because of this, we were unable to fully evaluate the functionality of the IFS-defined requirements or other implementation activities. We were, however, able to observe and evaluate a select number of Release 1 System Integration Testing (SIT) Cycle 1⁴ test cases and test scripts.⁵

Based on our limited tests, we determined that the IFS testing team developed test cases that, for the most part, contained a set of conditions, data, and expected results for a particular test objective; a corresponding test script to provide a series of instructions to carry out the test case; and a test folder to document the results of the testing process. Further, the testing team prepared a *Requirements Traceability Verification Matrix* (RTVM) in an effort to map accounting requirements to the corresponding test cases. However, we determined that some test cases and test scripts were incorrect or incomplete and the RTVM did not always provide an accurate traceability of requirements to be tested.

We recommended that the Chief Financial Officer (CFO), in concert with IFS project management, ensure that subsequent SIT test plans, cases, and scripts are complete and accurate and that all applicable financial system requirements can be readily accounted for during the testing process.

Management's Response: IRS management agreed with the recommendation presented in the report. The CFO has instituted a number of controls and procedures that have been applied to subsequent SIT Cycles. The controls and procedures include a concurrence process for each test plan that provides multiple reviews, rewrites, and approval of test plans prior to execution; training sessions for all SIT testers to explain general ledger postings and requirements; and creation and maintenance of a current list of requirements along with verification that all requirements are adequately tested. The RTVM has been reviewed and validated by the IRS and is reviewed weekly to ensure all requirements are properly mapped to test plans and all changes are reflected in the document. Additionally, the IRS Subject Matter Experts will reverify that requirements are mapped properly and have been met by the functionality tested before the test plan is approved. An approval signature is required on each test case for it to be considered passed. Management's complete response to the draft report is included as Appendix IV.

Copies of this report are also being sent to the IRS managers who are affected by the report recommendation. Please contact me at (202) 622-6510 if you have questions or Daniel R. Devlin, Assistant Inspector General for Audit (Headquarters Operations and Exempt Organizations Programs), at (202) 622-8500.

³ Subsequent to the conclusion of our fieldwork, the IRS announced the IFS implementation date has been further revised to October 2004.

⁴ The goal of SIT is to increase the probability that the IFS application will behave as expected under all defined circumstances and meet defined requirements. SIT Cycle 1 includes the creation of preliminary data on the system, the change and display of that data, and the recordation of simple financial transactions.

⁵ A test script is a series of instructions that carry out the test case contained in the test plan.

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Background

The Internal Revenue Service (IRS) is in the midst of Business Systems Modernization (BSM), a major technological and business process transformation program. BSM will radically change the IRS' approach to satisfying its customers – the taxpayers.

To achieve legislative compliance and provide critical financial management information, the IRS selected a commercial-off-the-shelf software package, designated as the Integrated Financial System (IFS), as a cost-effective alternative to improve its financial systems. One basic, yet significant, requirement of the IFS is that the system is to be compliant with the Joint Financial Management Improvement Program's (JFMIP)¹ *Federal Financial Management System Requirements*.² The IRS also expects the IFS to resolve several longstanding financial management issues identified by the General Accounting Office (GAO) during the annual financial statement audits.

The IRS plans to implement the IFS in at least four releases over a period of several years. Release 1 will include the JFMIP core accounting functions of Accounts Payable, Accounts Receivable, General Ledger Management, Budget Execution, Cost Management (also referred to as Cost Accounting), and Financial Reporting, as well as Budget Formulation. Release 1 will also include the mandated Health Coverage Tax Credit and Custodial Accounting functionality. Subsequent releases will provide for additional financial management functions, including Property, Procurement, and Performance Management, and enhancements to the cost accounting and finance modules.

To increase the probability that the IFS will function as intended and meet defined requirements, the IRS is working with a contractor to conduct System Integration Testing

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² The *Federal Financial Management System Requirements* are a series of publications prepared by the JFMIP as the key requirements that agency systems must meet to be substantially compliant with generally accepted accounting principles for the Federal Government.

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(SIT) prior to deploying the IFS. System testing is an essential component of the Enterprise Life Cycle, which governs system development activities and is required by IRS procedures. The SIT test plan³ provides that all test cases will describe the purpose of the test, any pre-conditions or post-conditions, the requirements to be verified, and the satisfaction criteria. The satisfaction criteria will state the conditions required for a test case to pass. Before testing can begin, test cases and scenarios should be developed, reviewed, and approved, and system requirements should be traced to test cases.

This on-line audit is a follow-on review to our prior audit of the IFS requirements definition that was issued in August 2003.⁴ The audit was conducted in accordance with *Government Auditing Standards* at the IRS National Headquarters in the office of the Chief Financial Officer (CFO) and the contractor's testing site located in Lanham, Maryland, from April through September 2003. Detailed information on our audit objective, scope, and methodology is presented in Appendix I. Major contributors to the report are listed in Appendix II.

Integrated Financial System Implementation Has Been Rescheduled to Complete System Testing and Development

The IRS has rescheduled the implementation of the IFS Release 1 from October 2003 to April 2004, due in part to delays in system testing.⁵ Thus, we were unable to fully evaluate the functionality of IFS-defined requirements or other implementation activities. Accordingly, we limited the scope of this audit to observation and evaluation of SIT Cycle 1 test cases and scripts.⁶ We will continue to review the IRS' subsequent test phases to fully accomplish our original objective of determining whether the IFS will provide administrative financial management information essential to financial statement preparation and management decision making.

³ Integrated Financial Systems – System Integration Test Plan Draft - Version 1.1, dated July 21, 2003.

⁴ *Requirements Definition of the Integrated Financial System* (Reference Number 2003-10-179, dated August 2003).

⁵ Subsequent to the conclusion of our fieldwork, the IRS announced that the IFS implementation date has been further revised to October 2004.

⁶ A test script is a series of instructions that carry out the test case contained in the test plan.

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The IFS system testing was split into two cycles. The SIT Cycle 1 testing was very basic and involved the creation of preliminary data on the system, the change and display of that data, and the recordation of simple financial transactions. The purpose of SIT Cycle 1 testing, as described to us by IRS officials and contractors, was to allow testers to become familiar with the testing process and environment to facilitate a more focused SIT Cycle 2 testing.

Conversely, the SIT Cycle 2 testing is very comprehensive and includes test transactions run with real data from the initial requesting entry to final payment. Further, SIT Cycle 2 testing retests most, if not all, of the tests from Cycle 1. The purpose of SIT Cycle 2 testing is to provide conclusions concerning the new system's functionality and to give assurances the system will work as intended.

Some Test Cases and Scripts Were Incomplete or Inaccurate, and Some System Requirements Could Not Be Easily Traced

We selected nine financial requirement areas for evaluation during the IFS testing phase based on findings reported in the IRS' financial statement audit reports, the GAO *Standards for Internal Control in the Federal Government*, and overall functionality risk. We observed and evaluated a selection of SIT Cycle 1 test cases and results corresponding to those areas; they are listed in Appendix I.

Based on our limited tests, we determined the IFS testing team developed test cases that, for the most part, contained a set of conditions, data, and expected results for a particular test objective; a corresponding test script to provide a series of instructions to carry out the test case; and a test folder to document the results of the testing process. Further, the testing team prepared a *Requirements Traceability Verification Matrix* (RTVM) in an effort to map accounting requirements to the corresponding test cases.

However, we determined some test cases and test scripts were incorrect or incomplete and the RTVM did not always provide an accurate traceability of requirements to be tested. Specifically, at least 1 of the following 9 conditions was observed in 1 or more of the 23 SIT Cycle 1 test cases reviewed:

- Test cases did not identify the post-condition or satisfaction criteria to be met.

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- Test scripts contained questionable United States Standard General Ledger (USSGL) accounts for transaction posting or did not contain both budgetary and proprietary accounts when appropriate.
- Tests, when completed and passed, did not give evidence that the IFS requirement was validated.
- Test scripts or test set⁷ information provided was not consistent.
- Test folders showed test results as passed even though satisfaction criteria had not been met.
- Test cases had no requirements listed for testing.
- Test cases listed requirements not mapped to the RTVM.
- Requirements mapped to a test in the RTVM were not listed on the test case.
- There was no straightforward way to verify that all applicable financial system requirements were included in the RTVM.

We identified several financial management activities or transactions that could be adversely affected by these incomplete or inaccurate test processes. For example:

- The IFS test developers did not include the satisfaction criteria for the following test case scenarios: capturing Federal income tax-related data, posting user fee deposits, posting depreciation to individual cost centers, and recording audit trail information.
- The test developers included questionable or incomplete USSGL accounts for the following test scripts: posting expenses and capitalized assets in the same transaction, posting user fee deposits, and using cancelled appropriations.

Without explicit, well-defined satisfaction criteria and the identification of specific USSGL account information, the

⁷ A test set is a collection of related test cases.

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testers may be hindered from fully completing the test as intended and may not accurately evaluate test results. By following defined testing processes, the IRS can better ensure the IFS will function as intended to provide administrative financial management information that is essential for financial statement preparation and management decision making.

We recognize that the IRS and contractor are continually reassessing and, where necessary, modifying IFS tests as system development activities proceed toward final implementation. Therefore, we are providing these observations in this report to assist management in identifying conditions that should be avoided or anticipated as the IRS moves into subsequent SIT testing phases.

We have also shared these audit results with our Information Systems Program audit staff, who are responsible for evaluating systems modernization from an information technology perspective, and who have previously reported similar concerns about testing from both a project-specific and enterprise-wide viewpoint.⁸ We will continue to coordinate our audit efforts on the IFS during our subsequent reviews.

Successful implementation of the IFS will require the collective and collaborative efforts of the CFO, Business Systems Modernization Office, and contractor. Ultimately, the CFO, as the IRS executive owner of the IFS, has the fiduciary responsibility to ensure that the IFS will function as intended. Therefore, complete and accurate testing of the IFS plays a critical role in the CFO's discharge of that responsibility.

Recommendation

1. The CFO, in concert with IFS project management, should ensure that subsequent SIT test plans, cases, and scripts are complete and accurate and that all applicable

⁸ *Testing Practices for Business Systems Modernization Projects Need Improvement* (Reference Number 2003-20-178, dated September 2003) and *Risks Are Mounting as the Integrated Financial System Project Team Strives to Meet an Aggressive Implementation Date* (Reference Number 2004-20-001, dated October 2003).

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financial system requirements can be readily accounted for during the testing process.

Management's Response: The CFO has instituted a number of controls and procedures that have been applied to subsequent SIT Cycles. The controls and procedures include a concurrence process for each test plan that provides multiple reviews, rewrites, and approval of test plans prior to execution; training sessions for all SIT testers to explain general ledger postings and requirements; and creation and maintenance of a current list of requirements along with verification that all requirements are adequately tested. The RTVM has been reviewed and validated by the IRS and is reviewed weekly to ensure all requirements are properly mapped to test plans and all changes are reflected in the document. Additionally, the IRS Subject Matter Experts will reverify that requirements are mapped properly and have been met by the functionality tested before the test plan is approved. An approval signature is required on each test case for it to be considered passed.

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Appendix I

Detailed Objective, Scope, and Methodology

We originally planned to determine whether the Integrated Financial System (IFS), when implemented, would function as intended to provide administrative financial management information that is essential for financial statement preparation as well as useful to Internal Revenue Service (IRS) managers and others. However, IFS testing efforts were delayed, and we were unable to complete the initial aspects of our original plan. The scope of this audit was limited to observation and evaluation of IFS System Integration Testing (SIT) Cycle 1¹ testing of Release 1 requirements for the administrative accounting activities of the IFS, as follows:

- I. Selected a judgmental sample of nine key Joint Financial Management Improvement Program (JFMIP)² financial requirement areas, based on findings reported in the IRS' financial statement audit reports, the General Accounting Office (GAO) *Standards for Internal Control in the Federal Government*, and overall functionality risk. The areas included:
 - Fixed Assets.
 - Receipt and Acceptance.
 - Reimbursable Work Agreements.
 - Multi-Year Reporting.
 - Cost Accounting.
 - Travel Advances and Obligations.
 - Taxable Transactions.
 - Financial and Treasury Information Executive Repository Reporting.
 - Audit Trail.
- II. For each of the nine JFMIP financial requirement areas, we identified relevant:
 - JFMIP standards.
 - Statement of Federal Financial Accounting Statements standards, technical releases, or exposure drafts.

¹ The goal of SIT is to increase the probability that the IFS application will behave as expected under all defined circumstances and meet defined requirements. SIT Cycle 1 includes the creation of preliminary data on the system, the change and display of that data, and the recordation of simple financial transactions.

² The JFMIP is a joint undertaking of the United States Department of the Treasury, the General Accounting Office, the Office of Management and Budget, and the Office of Personnel Management, working in cooperation with each other and other agencies to improve financial management practices in the Federal Government.

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- Department of the Treasury requirements.
 - Office of Management and Budget guidance.
 - GAO concerns from either its financial statement audits or its High Risk series.
 - Private sector Generally Accepted Accounting Principles.
 - IFS System Requirements Report requirements.
 - IFS financial management processes.
- III. Reviewed the major SIT Cycle 1 test documents, which included the Test Plan, the Test Schedule, the file of test cases, and the *Requirements Traceability Verification Matrix* (RTVM) that maps accounting requirements to the corresponding test cases.
- IV. Interviewed IRS Subject Matter Experts involved with the Computer Lab operation to define their role in the implementation process.
- V. Reviewed 23 test cases that related to the 9 JFMIP financial requirement areas shown in Step I. above, out of the total of 168 SIT Cycle 1 test cases, to identify administrative compliance with test development criteria (e.g., requirements listed, post-condition listed, correct/complete general ledger postings, etc.). We observed the actual tests being conducted for 11 of the 23 test cases and reviewed the corresponding test folders. Also, we reviewed the RTVM for traceability to individual test cases and general completeness.

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Appendix II

Major Contributors to This Report

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Appendix III

Report Distribution List

Commissioner C
Office of the Commissioner – Attn: Chief of Staff C
Deputy Commissioner for Operations Support OS
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Chief Information Officer OS:CIO
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Chief Counsel CC
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Office of Management Controls OS:CFO:AR:M
Audit Liaison: Chief Financial Officer OS:CFO

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Appendix IV

Management's Response to the Draft Report

02/23/2004 09:40 FAX 2026222261

CFO

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CHIEF FINANCIAL OFFICER

DEPARTMENT OF THE TREASURY
INTERNAL REVENUE SERVICE
WASHINGTON, D.C. 20224

RECEIVED
FEB 23 2004

February 23, 2004

MEMORANDUM FOR GORDON C. MILBOURN III
ACTING DEPUTY INSPECTOR GENERAL FOR AUDIT
FROM: *Eileen T. Powell*
Eileen T. Powell
Chief Financial Officer
SUBJECT: Draft Audit Report – Improvements Are Needed for Subsequent
Integrated Financial-System Testing (Audit # 200310027)

Thank you for the opportunity to review and comment on the draft audit report titled, *Improvements Are Needed for Subsequent Integrated Financial System Testing*. I agree with your recommendations and want to assure you that my staff and I are committed to implementing a financial management system that is compliant with the Joint Financial Management Improvement Program Federal Financial Management System Requirements. The IRS' objective for the Integrated Financial System (IFS) project is to implement a system to improve the IRS' ability to meet internal and external requirements with regard to management controls, performance measures and reporting, as well as improve the quality and timeliness of cost and administrative activity data for IRS executives and managers. To that end, we are working diligently to make sure IFS functions and performs in accordance with the requirements defined by the IRS.

I would like to recognize the dedication and cooperation of your staff during the audit. We appreciate the excellent advice and support the auditors provided to us. Our response to your recommendation follows:

RECOMMENDATION

The CFO, in concert with IFS project management, should ensure that subsequent System Integration Test (SIT) test plans, cases, and scripts are complete and accurate, and that all applicable financial system requirements can be readily accounted for during the testing process.

CORRECTIVE ACTIONS

The IRS CFO has instituted a number of SIT controls and procedures in response to the recommendation. These controls and procedures have been applied to subsequent SIT Cycles (including Cycle 2) and will be applied to any other SIT testing. The controls/procedures include:

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- The IRS established a concurrence process for each test plan (cases and scripts) that provides for multiple reviews, re-writes where necessary, and approval of test plans before they are executed. The objectives of this process are to ensure test plans adequately test each area, are complete with test procedures and expected results, and are mapped correctly to requirements.

The test plans (cases and scripts) were prepared by the contractors. The concurrence process provides for each test plan to be reviewed and approved by an IRS functional subject matter expert (SME), an IRS general ledger SME (where applicable), a technical SME (where applicable) and a SIT SME (for independent verification). All additions, deletions and/or changes to test cases are subject to this review process (including red-line changes made during the SIT testing). This review includes the validation of the proprietary and budgetary postings and verification of the accuracy and completeness of each individual requirement mapped to the test plan. The test plan review/approval process is centrally monitored and maintained by the IRS.

- The IRS provided a training session for all SIT testers (IRS and contractor personnel) to explain general ledger postings and requirements for populating tables used for generation of financial statements and other reports. Each tester was provided with reference materials to use during the SIT testing process to verify transaction postings to general ledger accounts and tables.
- The IRS created and is maintaining a current list of all requirements and has verified (through the concurrence process) that all requirements are being tested adequately.
- The Requirements Traceability Verification Matrix (RTVM) prepared by the SIT team (in Requisition Pro Rational) has been reviewed and validated by the IRS (to the IRS list described above) to ensure that all requirements have been properly mapped to test plans.
- The RTVM maintained by the SIT contractor is reviewed weekly by the IRS to ensure that all requirement change requests (CR) and any other changes have been properly reflected in the RTVM and documented.
- During the testing process, the IRS SME is responsible for re-verifying that the requirements are mapped properly and have been met by the functionality tested in the test plan (cases and scripts) before the test plan is approved. An IRS SME approval signature is required on each test cases for it to be considered passed.

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IMPLEMENTATION DATES

July 14, 2003	Conducted SIT Tester Training Session and distributed SIT reference materials
October 01, 2003	Began IRS Review and Validation of RTVM and continue to validate changes and modifications.
October 21, 2003	Established IRS current list of requirements and continuing list maintenance throughout SIT.
February 18, 2004	Conducted IRS SIT Tester Session to review responsibilities, objectives and importance of the SIT Tester role.

RESPONSIBLE OFFICIAL

Associate CFO for Internal Financial Management

CORRECTIVE ACTIONS MONITORING PLAN

IFS will continue to monitor the RTVM to ensure that it has been validated to the IRS list. Throughout SIT Testing the IRS SME's will also verify that requirements are mapped properly and are met before the test plan is approved. I will continue to work with IFS project management to ensure that SIT test plans, cases and scripts are complete and accurate.

Again, we appreciate your input and look forward to working with you and your staff as we complete the implementation of the IFS project. If you have any questions or need additional information please contact me at 202.622.6400 or Susan Spurling-Marcus at 301.731.3555.