AUDIT OF THE TIME AND ATTENDANCE PROCESSING SYSTEM DEVELOPMENT PROJECT (II)

Audit Report No. 99-011
February 17, 1999

OFFICE OF AUDITS

OFFICE OF INSPECTOR GENERAL

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DATE: February 17, 1999

TO: Donald C. Demitros, Director
Division of Information Resources Management

John Lynn, Acting Director
Division of Administration

FROM: David H. Loewenstein
Assistant Inspector General

SUBJECT: Report Entitled *Audit of the Time and Attendance Processing System Development Project (II)*
(Audit Report No. 99-011)

The Office of Inspector General (OIG) has completed an audit of the Federal Deposit Insurance Corporation's (FDIC) Time and Attendance Processing System (TAPS) development project. This report presents a summary of the TAPS development project and serves as a "lessons learned" document for the FDIC's use in managing future development projects, including the Corporation's current efforts on a system to support the processing of personnel information. Our report includes eight recommendations for incorporating needed controls into the Division of Information Resources Management's (DIRM) system development and contracting processes. FDIC's lack of adherence to established and generally accepted system development life cycle (SDLC) procedures and DIRM's ineffective contractor oversight practices contributed to the failure of TAPS and resulted in the unnecessary expenditure of significant corporate resources.

BACKGROUND

The OIG initiated an audit of the FDIC's TAPS development project in November 1996. In June 1997, we met with management to discuss our concerns and preliminary recommendations regarding the TAPS development process to that point. On September 29, 1997, we issued a final audit report entitled *Audit of the Time and Attendance Processing System (TAPS) Development Project* (Audit Report No. 97-106). This report paralleled our earlier discussions with management and identified three issues that the FDIC needed to address to improve the

TAPS development process. First, FDIC management did not have the information needed to make informed decisions regarding the development approaches for TAPS because the project team did not adhere to generally accepted system development methodologies when developing cost-benefit and feasibility analyses. In addition, FDIC management and project personnel did not have the information needed to properly manage the TAPS development effort because progress reports did not compare results being achieved to projected costs, benefits, and risks. Finally, the project team increased the risks associated with a successful completion of the project by deviating from accepted SDLC methodologies and performing design and development work before functional requirements were finalized. These issues seriously impaired management's decision-making ability regarding the viability of the project and resulted in additional costs and resource consumption to re-perform many efforts already completed.

FDIC management agreed with our findings and recommendations and committed to following a structured approach for developing TAPS. On October 22, 1997, the FDIC's Audit Committee requested that the Office of Internal Control Management (OICM) perform a review to determine the effectiveness of the project's internal controls and identify where internal controls may have broken down in the SDLC process. On March 18, 1998, OICM issued its report, which reiterated the issues identified by our office and contained several additional recommendations.

OBJECTIVES, SCOPE, AND METHODOLOGY

The objectives of the audit were to determine whether (1) the TAPS development was adhering to established and generally accepted SDLC procedures, (2) user requirements had been adequately defined, (3) system deliverables satisfied user requirements in a cost-effective and timely manner, and (4) adequate internal controls were incorporated into the design of the system. Because management discontinued the TAPS development effort before finalizing requirement and development activity, we were unable determine whether adequate internal controls had been incorporated into TAPS.

To accomplish our other audit objectives, we interviewed DIRM, Division of Administration (DOA), and contractor personnel responsible for developing TAPS. We also analyzed documentation prepared during the development process, including planning documents, project status reports, draft requirements documents, and design documents. In addition, we reviewed current policies and procedures related to the FDIC's SDLC methodology and attended TAPS Steering Committee meetings and other TAPS project meetings. The TAPS Steering Committee was comprised of senior management officials who made decisions on approaches regarding TAPS. Because of the time-sensitive nature of the TAPS development project, we met with DIRM and DOA personnel frequently throughout the audit to discuss our preliminary recommendations.

We conducted our audit between November 1996 and August 1998 in accordance with generally accepted government auditing standards.

RESULTS OF AUDIT

Although management committed to improving FDIC's development practices related to TAPS in response to recommendations made by our office and OICM, DIRM and DOA continued to deviate from FDIC’s SDLC process. Throughout our fieldwork, we advised TAPS program personnel and the TAPS Steering Committee about the project's lack of adherence to the FDIC's SDLC process. Specifically, we raised concerns about the quality, completeness, and accuracy of cost-benefit information being provided to management for decision-making purposes. We informed DIRM and DOA management that the lack of current, accurate, and complete feasibility and cost-benefit information on TAPS was seriously impairing senior management's decision-making ability regarding the project. However, management disregarded our concerns and deviated from generally accepted SDLC approaches throughout the life of the project.

Following our earlier report, DIRM and DOA again proceeded with design and development work before fully defining user requirements. In addition, the FDIC did not effectively manage the development of TAPS, and contractor oversight was not effective. These actions resulted in the unnecessary expenditure of at least $6.5 million and ultimately contributed to management's decision to discontinue the project.

In June 1998, the FDIC discontinued the TAPS development effort because of design complexities caused by DIRM’s failure to freeze requirements for the system. Shortly after the project was discontinued, we met with the Directors of DIRM and DOA to discuss our final conclusions regarding TAPS and to provide these management officials with our proposed recommendations for managing future information technology (IT) efforts. These recommendations, which are contained in this report, are aimed at ensuring that (1) management has the information needed to make informed decisions regarding whether and how to proceed with future development efforts, (2) DIRM disciplines itself to completing initial development phases before proceeding to subsequent phases of development projects, and (3) project status information and contractor oversight is improved so that management is aware of changes in schedule, cost, and risk. Many of the recommendations contained in this report are similar to recommendations contained in earlier OIG reports. We are restating the recommendations in this report because of DIRM’s failure to effectively address the recommendations in the past.

KEY TAPS DECISIONS NOT BASED ON SDLC METHODOLOGY

Shortly following our initial involvement with the TAPS project in 1996, we began raising concerns about the quality, completeness, and accuracy of cost-benefit information provided to management for decision-making purposes. The lack of current, accurate, and complete feasibility and cost-benefit information seriously impaired management's decision-making ability regarding TAPS and resulted in the unnecessary expenditure of significant corporate resources. Despite management’s commitment to improve its adherence to accepted SDLC methodologies and, thereby, improve information supporting management decisions, the FDIC continued to deviate from accepted practices throughout the project. The FDIC’s actions throughout the TAPS development process continued to increase the risk associated with the project, resulted in ever-increasing expenditures of unnecessary funds, and ultimately resulted in the discontinuance of TAPS development efforts.

Feasibility and Cost-Benefit of Alternative Solutions Not Considered

Throughout the development process, DIRM and DOA repeatedly took actions and expended funds toward the in-house development of an automated time and attendance system without formally evaluating the feasibility or cost-benefit of alternative solutions. Despite encountering significant problems throughout the project and committing to improve the planning process related to TAPS, DIRM and DOA did not re-evaluate their original course of action.

The purpose of a feasibility study is to provide senior management with: (1) an analysis of the project's objectives, requirements, and system concepts; (2) an evaluation of alternative approaches; and (3) a recommended approach. The purpose of a cost-benefit analysis (CBA) is to provide management with adequate cost and benefit information to analyze and evaluate alternative approaches. Because the structures of feasibility studies and CBAs are so similar, FDIC's SDLC Manual allows them to be combined.

DIRM and DOA developed an initial risk assessment, dated June 1995, and a CBA, dated July 1995, to support their decision to proceed with the in-house development of TAPS. However, these analyses did not use full life cycle cost data or formally evaluate alternative solutions, such as implementing only the Corporate Time and Attendance Worksheet (CTAW), modifying a commercial-off-the-shelf system, or modifying an existing system developed by another federal entity. In addition, TAPS cost-benefit information did not evaluate technical, cost, or schedule risks associated with the project or revisit original assumptions when significant changes took place in the project's scope, cost, and schedule. We also noted that estimated cost savings attributed to the development and implementation of TAPS were overly optimistic.

We met with DOA's TAPS program manager on May 2, 1997 to discuss our concerns regarding the limitations of the TAPS risk assessment and cost-benefit analysis. We reiterated our concerns to DOA's TAPS program manager on June 11, 1997 when significant changes were taking place in the project's scope, cost, and schedule. We advised the DOA project manager that alternative solutions should be formally evaluated and presented to senior management before proceeding with further TAPS development activities. Despite a verbal commitment to address our concerns, DIRM and DOA management awarded a $1.9 million contract to continue the in-house development of TAPS on July 24, 1997 without the benefit of a thorough and enhanced CBA or feasibility study.

On September 29, 1997, we reported on our concerns regarding the limitations of the TAPS CBA and risk assessment in our report entitled *Audit of the Time and Attendance Processing System (TAPS) Development Project* (Report No. 97-106). We noted that the TAPS CBA was not supported by adequate documentation and that the assumptions underlying the analysis were based on inaccurate and outdated information. We recommended in the report that DIRM and DOA revisit the TAPS CBA and review and update it, as necessary, throughout the development life cycle. We also recommended that DIRM and DOA evaluate the cost-benefit of alternative solutions to TAPS before continuing with additional development work. DIRM and DOA formally agreed to implement our recommendations and committed to following a structured approach for developing TAPS.

In November 1997, OICM initiated a review of the TAPS development project to determine the effectiveness of its internal controls and to determine where internal controls may have broken down. OICM's report, dated March 18, 1998, reiterated the concerns expressed by our office. OICM also determined that DIRM and DOA had informally considered three alternatives to TAPS before the project was initiated, but that this effort was cursory in nature and not adequately documented.

In December 1997, 5 months after awarding a contract to continue in-house development of TAPS, DIRM and DOA completed revisions to the TAPS CBA. However, these revisions did not include a formal evaluation of alternative solutions. DIRM’s Deputy Director stated that the significant cost savings projected for in-house development of TAPS would make alternative solutions non-viable. However, FDIC could not make informed decisions on the viability of other alternatives without such a study. Further, the projected cost savings for TAPS continued to be overly optimistic. The projected cost savings were outdated and based on a limited analysis performed in 1995. The projected savings were based primarily on a reduction in employee time to enter and process time and attendance information. However, the time savings projections were unsupported and optimistic. Further, some of the projected timesavings still being cited by DIRM and DOA in 1997, even if realistic, would have already been achieved through the implementation of the FDIC’s CTAW in 1996.

OICM recommended in its March 18, 1998 report that DIRM and DOA document the required components of a CBA and perform reviews of the projections and assumptions at various points during the SDLC. During this same time frame, FDIC was encountering significant problems in addressing TAPS requirements and designing a system architecture. A system architecture provides the structure for data and automated processes that the application will employ to support user requirements. However, despite these problems and management's commitment to address the concerns raised in the OICM and OIG reports, DIRM and DOA increased the value of the existing contract by 25 percent on March 18, 1998 without reconsidering the costs and benefits cited in the December 1997 CBA.

On March 31, 1998, DIRM documented a cursory review of three alternatives to TAPS that had been performed in 1995. The 1995 analysis had concluded that the alternatives were not viable solutions for the FDIC's time and attendance requirements. However, this analysis was flawed because the FDIC’s time and attendance requirements had not been defined at that time. In addition, the FDIC’s actions to merely document prior analyses did not address the status of alternatives in 1998, because TAPS requirements had been significantly modified on several occasions throughout the development effort. When FDIC documented this 1995 analysis in March 1998, it did not evaluate new potential solutions or re-evaluate potential solutions considered immature in 1995.

In May and June 1998, DOA began to question the assumptions underlying the projected cost savings associated with the development and implementation of TAPS. On May 12, 1998, DIRM and DOA revised the estimated cost savings attributed to TAPS from $15.2 million to $12.9 million over 5 years. DIRM and DOA further revised the estimated costs savings of TAPS on May 19, 1998 from $12.9 million to $1.5 million over 5 years. This more realistic evaluation of TAPS cost savings should have been performed as early as June 1997, when significant changes began taking place in the project's scope, cost, and schedule. Management would have had more accurate and meaningful information on which to base its decisions had such an analysis been performed in June 1997 when TAPS development efforts were being re-directed because of significant problems or at other times when major changes occurred in TAPS risks, costs, and schedules.

On May 21, 1998, DIRM and DOA awarded two additional contracts valued at approximately $1.8 million to continue development of TAPS, again without the benefit of a thorough and enhanced CBA. The TAPS Steering Committee justified the continued development of TAPS, despite the drastic reduction in estimated cost savings, on the premise that TAPS would "correct a deficiency in controls that was identified in a 1995 General Accounting Office (GAO) audit." However, as discussed in the following section of this report, this information was not accurate because GAO had no outstanding issues relating to the FDIC's time and attendance processes after 1995. We advised the TAPS Steering Committee that the deficiencies cited by GAO in its 1995 and prior year audit reports had already been corrected by FDIC in 1996. However, Steering Committee members disputed our statements.

On June 30, 1998, after expending at least $6.5 million on TAPS development and obtaining only a functional requirements document and external design document, the TAPS Steering Committee decided to discontinue the project.[1] In July 1998, DIRM and DOA began researching the feasibility of an integrated personnel system to be called the Corporate Human Resources Information System (CHRIS).

FDIC management's inability to make informed decisions regarding TAPS development can be attributed, in part, to confusion on the part of DIRM and DOA officials regarding the FDIC's own SDLC procedures. In a February 19, 1998 memorandum discussing OICM's review, the Deputy Directors of DIRM and DOA stated "There was no FDIC SDLC in 1995." The officials also stated "There are two versions of the FDIC SDLC, a March 1996 version and a July 1997 version; the March 1996 has no standard CBA format or structure and the July 1997 version does not require a CBA for any project."

Despite the assertions of these officials, the FDIC did have a SDLC process in 1995, the Electronic Data Processing (EDP) Project Guide. The FDIC's EDP Project Guide, which was based on the METHOD/1 SDLC methodology that FDIC purchased from Arthur Andersen in 1989, required a feasibility study and CBA during the planning phase of an IT project. Although DIRM updated the FDIC's SDLC process in March 1996, the March 1996 version required a feasibility study and CBA for major IT projects. The March 1996 version also required system developers to update CBAs when significant changes occurred in a project's cost, scope, or

[1] We were unable to determine the total costs related to TAPS because the FDIC did not track all costs incurred throughout the project.

schedule. DIRM again updated the FDIC's SDLC process in July 1997. The July 1997 version also required a feasibility study and CBA for major IT projects.

As the FDIC pursues a new direction to satisfy the FDIC's personnel processing requirements, we believe that DIRM and DOA should follow generally accepted SDLC practices and formally evaluate the feasibility and cost-benefit of alternative solutions. The FDIC's SDLC Manual requires that a feasibility study and CBA be completed before committing full life cycle resources. Other government and industry guidelines also stress the importance of feasibility studies and CBAs. For example, *Evaluating Information Technology Investments*, a practical guide issued jointly by the Office of Management and Budget (OMB) and GAO in November 1996, recommends that management evaluate the cost-benefits and risks of IT projects before making significant investments in those projects. We also believe that the results of DIRM’s and DOA's evaluation should be presented to the FDIC's IT Council for approval before investing significant life cycle resources or executing additional contracting actions. The FDIC’s IT Council is responsible for ensuring that strategic IT planning is performed from a corporate perspective.

Proposed changes to the FDIC's SDLC Manual would require that CBAs be updated and approved by DIRM’s Deputy Director when significant changes occur in the project's scope, estimated resources, or timeframes. While updating CBAs throughout a project's life cycle is consistent with sound business practices and guidelines, such as OBM Circular A-130, we believe that subsequent approvals of CBAs should be made at a higher level of management, such as the IT Council, when significant changes occur in a project's scope, cost, or schedule.

Key Assumption for Proceeding with TAPS Based on Inaccurate Information

One of the FDIC's key assumptions for continuing with the TAPS project was based on inaccurate information. Specifically, cost-benefit information used by senior management throughout the project assumed that implementing TAPS would correct certain internal control weaknesses that had been reported by GAO in prior year financial statement audit reports. In its audit of FDIC's 1995 financial statements, dated July 1996, GAO reported, "As in previous audits, our 1995 audits continued to identify deficiencies in adherence to required procedures in preparing time and attendance reports, separation of duties between timekeeping and data entry functions, and reconciliation of payroll reports to time cards."

During May and June 1998, when the FDIC drastically reduced the projected cost savings attributed to TAPS, senior FDIC management cited benefits for continuing TAPS development efforts. These management officials placed particular reliance on the assumption that TAPS would correct the internal control deficiencies noted earlier by GAO. However, the FDIC had taken other actions during 1996 to address GAO's internal control concerns related to the FDIC's time and attendance processes.

In its audit of the FDIC's 1996 financial statements, dated June 1997, GAO reported, "We found that the implementation of these new procedures effectively addressed the internal control issues we identified in the time and attendance reporting process in our prior year's audits." We spoke with a GAO official and confirmed that the FDIC's implementation of time and attendance reporting procedures during 1996 had effectively addressed the internal control issues identified in GAO's prior year audits. The GAO representative also informed us that, as of June 4, 1998, there were no outstanding internal control issues relating to the FDIC's time and attendance processes.

We advised the TAPS Steering Committee of our research and discussions with GAO on June 9, 1998. We informed the committee that TAPS was not needed to address earlier GAO concerns and that internal control weaknesses cited by GAO in prior years should not be used as a reason for continuing with TAPS development. However, members of the TAPS Steering Committee disputed the information provided and continued with TAPS development activities until the project was ultimately terminated in July 1998. Although management disagreed with the information we provided them regarding GAO’s lack of time and attendance control concerns, their current proposal to acquire an integrated corporate human resources system calls for postponing implementation of the FDIC’s time and attendance requirements.

Recommendations

We recommend that the Director, Division of Information Resources Management:

(1) Modify the FDIC’s SDLC process to require a formal evaluation of feasibility and cost-benefits for alternative solutions to satisfy the FDIC's system development requirements and present this information to the FDIC's IT Council for approval before committing significant life cycle resources to a particular alternative.

(2) Maintain current, accurate, and complete cost-benefit information throughout the project and regularly compare this information to that which was relied upon by senior management at the outset of the project.

(3) Revise the FDIC’s SDLC Manual to require project staff to advise senior management when significant deviations occur in the project's cost-benefit information, timelines for implementation, or risk and present this information to the FDIC’s IT Council for approval prior to proceeding with the project.

DIRM’S CONTRACT MANAGEMENT NEEDS IMPROVEMENT

Despite management’s commitment to follow the FDIC’s structured development approach in response to recommendations in our initial TAPS audit report, the FDIC entered into several contracts for the design and development of TAPS without first completing and approving user requirements. In addition, the project development schedules and cost estimates used to obtain senior management approval of the TAPS contracts were not supported by detailed analyses or documentation. We also noted that the terms of the TAPS contracts were broad and did not require the contractor to provide deliverable products within specified timeframes. Such contracts typically require increased contractor oversight. However, DIRM's oversight of the

TAPS contractor was ineffective. Contractor concerns were not addressed in a timely manner, if at all, and were not regularly communicated to senior management.

The FDIC's SDLC process requires that user requirements be defined, documented, and approved before making significant investments in detailed design and development work. The FDIC's lack of adherence to prescribed SDLC procedures, coupled with DIRM’s ineffective contractor oversight, contributed to project delays, unnecessary costs, and the ultimate termination of TAPS development activities.

Contract Initiation

In discussions during May and June 1997 and in our September 1997 report, we advised management that the project team had increased the risks associated with a successful completion of the project by performing design and development work before functional requirements were finalized. We reported that as much as 90 percent of the TAPS design work that had been completed as of June 1997 had to be re-performed because of changes in user requirements.

The FDIC awarded a $1.9 million contract in July 1997 for the design and development of TAPS, again without first completing and approving a functional requirements document (FRD). The FDIC's SDLC process requires that user requirements be defined, documented, and approved in an FRD before making significant investments in detailed design and development work. The risk in performing development work before requirements have been defined is that if business requirements change or do not receive management approval, the investment in the development work may not benefit the project or the Corporation. Validation of requirements early in a system's life cycle development is important because failure to validate requirements can result in frequent and expensive changes in later life cycle phases. Given the complexity of the proposed TAPS system, the project team could not have completed TAPS requirements definition and obtained approval of an FRD by July 1997, which is when the FDIC awarded a contract for the development of TAPS.

The FDIC's contractor recognized that TAPS user requirements had not been completely defined or approved when it submitted its contract proposal in July 1997. The contractor proposed that the FDIC's requirements first be validated for accuracy and completeness before initiating development work. The contractor also proposed that an evaluation be performed of the TAPS design to ensure that it correctly translated TAPS requirements into a system that would operate properly in DIRM's planned three-tier architecture. DIRM’s three-tier architecture comprises the hardware, communications, and operating software for applications processing in a client-server environment.

The FDIC’s TAPS Steering Committee approved the award of the TAPS contract without detailed information regarding how DIRM determined that TAPS development and implementation could be completed by February 1998 at a cost of $1.9 million. We spoke with the DIRM oversight manager for TAPS and learned that DIRM had not performed a detailed analysis supporting the projected costs and delivery dates. Subsequent extensions in the project schedule and increases in the project cost indicate that DIRM's estimated costs and implementation date were not adequately analyzed.

As the project progressed, the TAPS project team did not finalize the FRD or the TAPS technical architecture. As discussed in the following section of this report, beginning in August 1997, the TAPS contractor expressed concerns that unresolved TAPS requirements and design issues could significantly affect the project schedule. However, DIRM's oversight manager did not effectively address these issues in a timely manner.

On March 18, 1998, the FDIC increased funding under the TAPS contract by $492,423 (25 percent) to complete development and testing of TAPS. However, the FDIC had still not completed an FRD or external design document (EDD) for TAPS. An EDD translates the requirements defined in an FRD into a structure that facilitates development of the system. In addition, many questions remained regarding the viability of the TAPS, including whether the complexity of certain requirements could be resolved, what the final versions of the FRD and EDD would encompass, and whether in-house development was the most cost-effective approach to satisfy the FDIC's needs. In spite of these uncertainties and the stated intent of the March 18, 1998 contract to complete development and testing, the FDIC awarded a $299,975 “bridge contract” on May 21, 1998 for TAPS development and implementation. On the same day, the FDIC awarded another TAPS contract valued at $1.47 million to enhance and implement TAPS. However, as with previous TAPS contracting actions, the FDIC had still not completed an FRD or EDD for TAPS.

Less than a month after the May 1998 contracting actions, the TAPS Steering Committee significantly reduced the scope of the TAPS project. In June 1998, DIRM and DOA directed its contractor to complete the TAPS FRD and EDD and in July 1998, discontinued development of TAPS. Management desired the completion of the FRD and EDD to refine requirements to support possible future development. At the completion of the project in July 1998, the FDIC had expended over $6.5 million on TAPS and completed only two SDLC deliverable products, an FRD and EDD.

Recommendations

We recommend that the Director, Division of Information Resources Management:

(4) Ensure that pre-requisite SDLC phases are substantially complete and require SDLC deliverable products to be finalized and approved by senior management before proceeding with subsequent SDLC phases.

(5) Ensure that system development contracts provide for specific SDLC deliverable products to allow oversight managers to better monitor contractor progress.

Contractor Oversight Not Effective

DIRM did not adequately oversee contractor activities related to the project and did not effectively communicate with contractor staff responsible for developing TAPS. Specifically, DIRM's oversight manager for TAPS did not ensure that requirements were defined and design issues resolved. In addition, DIRM's contract oversight manager did not regularly communicate the contractor's concerns to senior DIRM or client management. We noted that these concerns were being raised by the contractor in its weekly status reports throughout the project. Not addressing and resolving these issues in a timely manner caused inefficiencies and delays in the development process and resulted in the technically deficient system design that had to be re-performed at additional costs to FDIC.

The contract required the TAPS contractor to perform its work in accordance with the FDIC's SDLC process. However, it did not require the contractor to develop or complete any specific SDLC deliverable products within a particular time period. Contracts of this nature typically require a higher degree of contractor oversight than contracts containing fixed deliverables and delivery schedules. However, DIRM's contract oversight manager did not require the contractor to develop a project work plan for the project that met the criteria stated in the SDLC Manual and was required by the TAPS contract. Project work plans serve as a basic management tool for oversight managers in monitoring contractor activities.

As early as August 1997, the FDIC's TAPS contractor began reporting in its weekly status reports that ongoing changes to TAPS screen designs could seriously impact the development schedule. In September 1997, the contractor began reporting that ongoing changes to TAPS system architecture requirements could dramatically alter TAPS design specifications and implementation schedules. Although the TAPS Steering Committee decided to minimize screen design changes in September 1997, screen designs for some portions of the system continued to change.

Ongoing changes to TAPS requirements and design continued to plague TAPS throughout the life of the project. In its status report for the period of November 1-7, 1997, the TAPS contractor reported, "It is imperative that the screen designs be frozen immediately. This is essential so that progress on the remainder of the development effort can continue based on known decisions thereby reducing the risk of re-work." By February 1998, the requirements and design issues had still not been resolved. In its status report for February 21-28, 1998, the contractor stated, "a considerable number of issues remain open. Many of these issues directly affect system design and functionality. Delays in resolving these issues will negatively impact the project schedule."

Despite the unresolved requirements and design issues, DIRM approved the contractor's proposed technical architecture for TAPS on February 26, 1998. Approximately 4 days later, DIRM verbally advised the contractor that the proposed TAPS architecture was technically deficient and would not operate properly in the FDIC's planned three-tier architecture, even though this architecture was still being designed. On April 27, 1997, the contracting officer for TAPS issued a letter to the TAPS contractor, rejecting its February 1997 invoice for \$339,531.45, stating, "The product(s) delivered to the FDIC are unacceptable. Specifically, the external design of the system being developed was technically deficient as proposed and needed to be completely redone at additional cost in order for it to be workable."

However, under the terms of the TAPS contract, the FDIC's contractor was not required to provide any system deliverable products, but rather "systems development and implementation support services." In a May 7, 1998 letter to the contracting officer, the contractor stated that had it been the FDIC's intent for the TAPS contract to be a product contract, then a contract administration plan should have been prepared and delivered to the contractor. Such a plan should have defined specific products and delivery requirements and defined the acceptable criteria FDIC would use to measure required products. The contractor indicated that it never received such a plan. On
May 13, 1997, DIRM requested that the contracting officer pay the contractor's February 1998 invoice.

DIRM's oversight manager for TAPS did not ensure that a project work plan was developed for the project, as required by the FDIC's SDLC process. Project work plans serve as a basic management tool for oversight managers in monitoring contractor activities. According to the FDIC's SDLC Manual, the purpose of a project work plan is to formally capture and document agreements among project participants regarding project scope, tasks, schedule, allocated resources, and interrelationships with other projects. The Manual states, "the Project Work Plan will make clear the responsibility and accountability of the various parties." By securing an informed agreement at the start, and revisiting the agreement throughout the project's life cycle, developers can better prevent cost and schedule overruns and ensure that the project will meet expected results.

Although the contractor provided the DIRM project manager with a scheduling product that identified required tasks and timeframes for completing those tasks, the scheduler did not provide the detail prescribed by the FDIC's SDLC Manual**.** The SDLC Manual states, “Project Managers should use Microsoft Project, an automated planning tool, to develop a work breakdown structure (WBS).” However, the WBS contains only one element of the project plan described in the FDIC’s SDLC Manual. Missing are important attributes of the plan, including project description, project team description, acquisition strategy, risk and control measures, required deliverables, and required review authorities. In addition, the use of Microsoft Project as a TAPS planning tool was not implemented as intended by the manual, because the TAPS project plan had no method of tracking task resource requirements. Obtaining formal, senior management approval of a project work plan ensures that management has the information necessary to make informed decisions on the project and that changes in the project's scope, costs, and time schedules are adequately controlled.

Recommendations

We recommend that the Director, Division of Information Resources Management:

(6) Ensure that oversight managers develop project work plans as prescribed by the FDIC's SDLC Manual that contain measurable tasks and milestones, clearly defined roles, responsibilities, and accountability and provide this information to senior management for decision-making on IT projects.

(7) Ensure that oversight managers develop progress reports that compare results being achieved to projected costs, benefits, and risks so that potential managerial, organizational, or technical problems can be identified.

DIRM's INTERNAL CONTROL PROCESS WAS NOT EFFECTIVE

DIRM's implementation of a risk assessment program, as required by FDIC Circular 4010.3, *FDIC Internal Control Programs and Systems,* did not provide management with accurate information on risks and related controls. The FDIC implemented the program in accordance with the Chief Financial Officers Act of 1990 to evaluate risks by accountability unit and to measure the effectiveness of controls to mitigate the risks.

The FDIC circular requires accountability unit managers to assess risks to their program areas and alert management to potential weaknesses. However, despite the significant problems encountered by FDIC on recent system development efforts, DIRM's Assistant Director, Corporate Applications Branch, rated all functions within his branch as a "1" (the lowest risk rating available) in February 1997. The Assistant Director also stated in his narrative, "Corporate Application Branch rates as 'Low Risk' the susceptibility of its functions to waste, loss, unauthorized use, or misappropriation."

Based on our reviews of system development projects since 1996 that showed the FDIC's own experience with the lack of controls over the SDLC process and a history of several expensive projects that were less than successful, this rating was not indicative of the controls over the process used to develop TAPS. Without accurately depicting the internal control environment within that branch, senior management officials will not have the information they will need to correct the deficiencies of that branch's control mechanisms.

Recommendation

We recommend that the Director, Division of Information Resources Management:

(8) Require senior management officials to accurately assess the controls over the SDLC process being used within their areas of responsibility and implement effective controls when existing controls are deficient.

CORPORATION COMMENTS AND OIG EVALUATION

On January 29, 1999, the Director, DIRM, provided a written response to the draft report. The response is presented in Appendix II to this report.

The Director, DIRM, stated that his office cannot unilaterally implement recommendations one and three because implementation of these recommendations would require the approval by the

IT Council. We agree with his statement. Subsequent correspondence with the Director and the Special Assistant to the Deputy to the Chairman and Chief Operating Officer indicated that the Deputy to the Chairman and Chief Operating Officer will convene a meeting to review the issues of cost-benefit analyses thresholds and IT Council approvals after this audit report is issued.

The Corporation's written response and subsequent correspondence provides the elements necessary for management decisions on the report's recommendations.

APPENDIX I

CHRONOLOGY OF KEY TAPS DATES

Date	
1995	
June	FDIC issued a Bi-Weekly Time and Attendance Project Task Force report that recommended developing a fully automated time and attendance system in two phases.
1996	
April	First phase of the development of a fully automated time and attendance processing system, the Corporate Time and Attendance Worksheet was implemented.
November	OIG initiated TAPS audit.
1997	
April	TAPS development (Phase II) experienced problems and the effort was redirected.
May/June	OIG met with FDIC management about the need to revisit the cost-benefit of developing TAPS in-house and examine other alternatives, the need for more detailed progress information, and the need for DIRM to discipline itself to completing pre-requisite development phases before starting subsequent phases. Management agreed to implement our oral suggestions.
July	FDIC awarded a $1.9 million contract to develop TAPS in-house without performing pre-requisite work contained in the OIG suggestions.
August	TAPS contractor began raising concerns about continuing changes to requirements and system architecture.
September	OIG issued final audit report on the shortcomings of the TAPS development, formalizing our recommendations. Management agreed to implement the recommendations.
October	FDIC's Audit Committee requested OICM to evaluate the effectiveness of controls in the FDIC's SDLC methodology. The OIG reviewed a revised draft CBA and provided oral comments to management. The CBA still did not consider other alternatives and projected cost savings were overly optimistic.

APPENDIX I

CHRONOLOGY OF KEY TAPS DATES

Date	
1997	
December	TAPS Steering Committee approved CBA supporting in-house development of TAPS. OIG expresses concerns that CBA still did not consider other alternatives and projected cost savings were overly optimistic. DIRM's Deputy Director stated that projected cost savings were so significant that evaluation of other alternatives was not warranted.
1998	
January to June	OIG worked with OICM and TAPS Steering Committee regarding CBA, internal control issues, contractor oversight, and system architecture.
February	DIRM accepted and later rejected TAPS contractor's proposed system architecture.
March	OICM reported to the Audit Committee and confirmed OIG findings and recommendations. TAPS Steering Committee approved $492,423 increase in TAPS development contract (25 percent of original contract value) without reassessing CBA and project risks.
May	TAPS Steering Committee awarded an additional $299,975 "bridge" contract for the TAPS project. On the same day, the TAPS Steering Committee awarded $1.47 million contract for TAPS development to a new contractor. Both contracting actions taken without reassessing CBA and project risks.
June	TAPS project reduced in scope to finish FRD and EDD.
July	TAPS Steering Committee terminated the project.

APPENDIX II

FDIC

Federal Deposit Insurance Corporation

3501 North Fairfax Drive. Arlington, VA 22226 Division of Information Resources Management

January 29, 1999

MEMORANDUM TO: David H. Loewenstein
Assistant Inspector General

FROM: Donald C. Demitros
Director

SUBJECT: Revised Response to Draft Report Entitled *Audit of the Time and Attendance Processing System (TAPS) Development Project*

Based on meetings held on January 7th and 27th to discuss the response to the Draft Audit Report, the Division of Information Resources Management (DIRM) revised its response to address OIG concerns. This revised response also provides clarification for some specific items discussed in the meetings.

In general, the recommendations in this report focus on breakdowns in the project management process. DIRM recognizes this and has strengthened existing processes and established new mechanisms to address this overall problem. These include: more complete and robust IT plans for all projects; new management reporting; new guidelines for cost benefit analysis; post implementation reviews; and internal controls which tie to the steps in the SDLC.

Currently, each project that exceeds $200,000 has an IT Plan established at its inception along with appointment of a project owner from the requesting division or office. New information is now being captured in the IT Plan including early warning, overall project issues, budget issues, project justification, milestones, budget, and expenditures. This data is being used to produce a new management report highlighting budget variances, project slippage, and project risks such as poor customer participation, project scope creep, technical challenges, staffing issues, contractor performance/management. Strict adherence is placed on cost and schedule. Expenditures for these projects are automatically updated via a direct tie to the DIRM budget system and requests to change completion dates for major project milestones require Branch Chief approval or higher for key projects. In addition, during the annual budget formulation process, the funding and justification of the project is reviewed by the requesting division's line management, the IT Technical Committee, and the IT Council. Processes have been established to insure that any significant changes in major projects are brought before the IT Technical Committee for review and approval.

New procedures for conducting a cost benefit analysis, based on OMB and DOF guidelines, have been published and are being used on projects such as ETVS and CHRIS. These procedures will be formally published with the next release of the SDLC. DIRM is now conducting post implementation reviews, which include a level of review to assess a project at the time of design, as well as looking at a project after its implementation.
Also, our new internal controls are now tied to the specific SDLC processes to ensure that we are adhering to our development methodology. Following approval of the new management control plan for systems development, a copy will be provided to the OIG.

For recommendations 1-4, 6 and 7, DIRM will reemphasize specific requirements and responsibilities to all project managers by March 31, 1999. This will be accomplished through the issuance of a memorandum from the Director of DIRM to all project managers clearly communicating the policies referenced in this response. DIRM will also submit a revision to the SDLC to emphasize these policies by April 30, 1999.

DIRM believes that the above actions will address the overall recommendations included in this report. The following outlines DIRM corrective actions already taken or planned (including anticipated due dates) in response to each individual recommendation.

Recommendation 1

> **Modify the FDIC's SDLC process to require a formal evaluation of feasibility and cost-benefits for alternative solutions to satisfy the FDIC's system development requirements and present this information to the FDIC's IT Council for approval before committing significant life cycle resources to a particular alternative.**

Corrective Action

> The SDLC currently requires a project budget package, including a formal evaluation of alternatives, be prepared for all corporate projects expected to exceed the IT Dollar threshold. This threshold, currently set at $3 million, and a new formal CBA format now exist but were not in place when TAPS was initiated. These new guidelines and IT dollar threshold, which are consistent with the DOF Directive on Cost Benefit Analysis Methodology for the Purchase or Development of Capital Assets (Circular 4310.1), have been used for recent projects, such as: the Structure Information Management System; Electronic Travel Voucher Processing System (ETVPS); and other non-application projects. They are also being used to perform the Cost Benefit Analysis for the new Corporate Human Resources Information System (CHRIS). Also, IT Plans are required for all projects exceeding $200,000 and, for any of these projects that are new, a cost justification must be developed which includes the full life cycle costs and benefits for the proposed alternative. These procedures and the IT Dollar thresholds will be formally published with the next release of the SDLC, which will clearly state the requirement for performing CBA's. DIRM, with the IT Committee, will, by April 30, 1999, also review the current dollar threshold to determine whether it warrants adjustment. As an interim

measure, the new guidelines (Attachment 1) and IT dollar threshold will be reemphasized and formally communicated to all project managers by March 31, 1999.

DIRM will reinforce its efforts to review project progress with clients, ensuring their clear understanding and obtaining their approval of both original cost-benefit analyses, and changes that modify the results of those analyses. DIRM also will present the initial CBA and any updates for projects over $3 M to the IT Technical Committee. The IT Technical Committee will report any project issues to the IT Council.

Recommendation 2

Maintain current, accurate, and complete cost-benefit information throughout the project and regularly compare this information to that which was relied upon by senior management at the outset of the project.

Corrective Action

DIRM agrees that accurate cost-benefit information should be maintained and that it is the responsibility of the project managers to do so. It is also the project manager's responsibility to review this information at critical points and alert senior management of any deviations (schedule setbacks, cost overruns) that warrant revision of the cost-benefit information or reevaluation of the project by senior management. DIRM will, by March 31, 1999, modify the new Cost Benefit Analysis guidelines to require project managers to review this information at critical points and alert senior management of any deviations (schedule setbacks, cost overruns) that warrant revision of the cost-benefit information or reevaluation of the project.

Recommendation 3

Revise the FDIC's SDLC Manual to require project staff to advise senior management when significant deviations occur in the project's cost-benefit information, timelines for implementation, or risk and present this information to the FDIC's IT Council for approval prior to proceeding with the project.

Corrective Action

Alerting senior management to significant deviations in cost-benefit information, timelines, or increased risk is now required of all DIRM project managers. Corrective actions already have been taken to ensure that the problems experienced with TAPS do not reoccur. IT plans, required for all projects exceeding $200,000 in expenditures, have warning flags automatically set to alert senior management when completion dates for major project milestones are slipping (Refer to Attachment 2). These flags are reviewed monthly and project managers are required to report to DIRM senior management to explain the issues and obstacles causing the warning flags. Changes to schedules and projected cost expenditures are tightly controlled. A Branch Chief must approve changes to schedules on all projects. The expenditures are automatically updated, and therefore controlled via the budget system. These requirements will be formally reemphasized and communicated to all project managers by March 31, 1999.

Also, the CHRIS Steering Committee has developed a charter outlining their roles and responsibilities – the charter tasks the Steering Committee with the responsibility for ensuring that the project stays on schedule and within budget. The Committee will hold meetings every three weeks at which the project managers will report on progress versus the project plans and budget, and advise the Committee of any potential obstacles or previously unforeseen risks.

The IT Council provides the approval authority for the initiation of IT systems development projects. It is the responsibility of project managers and, if appropriate, Steering Committees, to ensure projects are reviewed and reevaluated at critical management checkpoints during the life cycle of the systems development effort. In addition, schedule slippage of more than 60 days or projected cost overruns of more than 20 percent for any major project will be presented to the IT Technical Committee for management action. The IT Committee will report these project issues to the IT Council. DIRM will arrange, by March 31, 1999, for the OIG to meet with the IT Committee to discuss the OIG proposal to change the charters of the IT Committee or IT Council to approve such deviations to project schedules or costs.

Recommendation 4

Ensure that prerequisite SDLC phases are substantially complete and require SDLC deliverable products to be finalized and approved by senior management before proceeding with subsequent SDLC phases.

Corrective Action

All DIRM project managers are responsible for ensuring that prerequisite SDLC phases are substantially complete and approved prior to proceeding with subsequent SDLC phases. This process is in place but was not regularly adhered to during the TAPS systems development effort. Corrective actions have been taken to address these problems. As a model for major projects, the CHRIS Steering Committee Charter outlines specific responsibilities of the Committee, including ensuring that prerequisite phases of the SDLC are substantially complete prior to proceeding with succeeding phases. The Committee meets every three weeks at which time the project managers report on progress versus the project work plan and the completion of specific SDLC deliverables.

The requirement to ensure that prerequisite SDLC phases are substantially complete and approved prior to proceeding with subsequent SDLC phases will be highlighted in the next SDLC revision. This requirement will be formally reemphasized and communicated to all project managers by March 31, 1999.

Recommendation 5

Ensure that system development contracts provide for specific SDLC deliverable products to allow oversight managers to better monitor contractor progress.

Corrective Action

Once oversight of the TAPS contractor was found to be inadequate, steps were successfully taken to correct these problems – for example, on-site contractor oversight was provided, and daily project status meetings were held to more closely monitor the contractor's progress.

To ensure the lessons learned from the TAPS project carry over to subsequent development projects, DIRM began a contracting improvement project that includes nine major initiatives. Among the nine initiatives is the development of an expanded description of SDLC requirements for all systems development contracts, and a consultant's review of IT Acquisition best practices. The best practice review will look for ways to improve the actual systems development contract vehicles to ensure that DIRM receives optimal IT services and products from its systems development contracts.

DIRM will also review all existing systems development contracts by March 31, 1999, to ensure they contain language requiring appropriate SDLC deliverable products. DIRM and ASB have developed standard statement of work (SOW) language for systems development contracts to ensure that the appropriate SDLC deliverable products are specified in all future contracts. This standard language is currently undergoing internal review and is expected to be ready for communication to all Oversight Managers by March 31, 1999.

Recommendation 6

Ensure that oversight managers develop project work plans as prescribed by the FDIC's SDLC Manual that contain measurable tasks and milestones, clearly defined roles, responsibilities, and accountability and provide this information to senior management for decision-making on IT projects.

Corrective Action

Project managers currently develop project work plans with the appropriate SDLC tasks, milestones, roles, and responsibilities. Plans developed for TAPS were not adhered to consistently and corrective action has already been taken to ensure this does not reoccur with future (major) IT projects.

For example, the CHRIS Steering Committee will meet regularly and be briefed by the DOA and DIRM project managers to ensure that the work plans are reasonable and schedules are being met.

DIRM will continue to place emphasis on robust project work plans that adhere to the FDIC's SDLC and are regularly presented to senior management to help with decision making. DIRM will formally reemphasize and communicate these requirements to project managers by March 31, 1999.

Recommendation 7

Ensure that oversight managers develop progress reports that compare results being achieved to projected costs, benefits, and risks so that potential managerial, organizational, or technical problems can be identified.

Corrective Action

DIRM project managers are required to update information in their respective IT Plans including budget, cost, milestones, and management issues on a monthly basis. Management reports are produced from the data in the IT Plan database which highlight budget variances, project slippage, and overall project risks. These reports are used in project review meetings with DIRM senior management and project managers. DIRM will formally reemphasize and communicate the requirement to update the IT Plans on a monthly basis to project managers by March 31, 1999.

Recommendation 8

Require senior management to accurately assess the controls over the SDLC process being used within the areas of their responsibility and implement effective controls when existing controls are deficient.

Corrective Action

DIRM has recently completed a redesign of its internal control program, which includes an assessment of the risks, control objectives and control techniques for all DIRM operations, including systems development. By March 31, 1999, DIRM will conduct a review of the identified controls over the SDLC process to determine if additional controls are warranted.

Please address any questions to Mr. Rack Campbell, DIRM’s Audit Liaison, at 516-1422.

Attachment

APPENDIX III

MANAGEMENT RESPONSES TO RECOMMENDATIONS

The Inspector General Act of 1978, as amended, requires the OIG to report the status of management decisions on its recommendations in its semiannual reports to the Congress. To consider FDIC's responses as management decisions in accordance with the act and related guidance, several conditions are necessary. First, the response must describe for each recommendation

- the specific corrective actions already taken, if applicable;
- corrective actions to be taken together with the expected completion dates for their implementation; and
- documentation that will confirm completion of corrective actions.

If any recommendation identifies specific monetary benefits, FDIC management must state the amount agreed or disagreed with and the reasons for any disagreement. In the case of questioned costs, the amount FDIC plans to disallow must be included in management's response.

If management does not agree that a recommendation should be implemented, it must describe why the recommendation is not considered valid.
Second, the OIG must determine that management's descriptions of (1) the course of action already taken or proposed and (2) the documentation confirming completion of corrective actions are responsive to its recommendations.

This table presents the management responses that have been made on recommendations in our report and the status of management decisions. The information for management decisions is based on management's written responses to our report and subsequent discussions with management.

Rec. Number	Corrective Action: Taken or Planned/Status	Expected Completion Date	Documentation That Will Confirm Final Action	Monetary Benefits	Management Decision: Yes or No
1	DIRM will reemphasize specific requirements and responsibilities to all project managers through the issuance of a memorandum by March 31, 1999. DIRM will also submit a revision to the SDLC to emphasize these polices by April 30, 1999. DIRM, with the IT Technical Committee, will review current CBA dollar thresholds.	April 30, 1999	Specific changes to the SDLC Manual and memorandum to project managers.	None	Yes
2	DIRM will reemphasize specific requirements and responsibilities to all project managers through the issuance of a memorandum by March 31, 1999. DIRM will also submit a revision to the SDLC to emphasize these polices by April 30, 1999. DIRM will modify CBA guidelines.	April 30, 1999	Specific changes to the SDLC Manual, modified CBA guidelines and memorandum to project managers.	None	Yes
3	DIRM will reemphasize specific requirements and responsibilities to all project managers through the issuance of a memorandum by March 31, 1999. DIRM will also submit a revision to the SDLC to emphasize these polices by April 30, 1999. DIRM will arrange for the OIG to meet with IT Council to discuss the changes in charters of the IT Council and Technical Committee.	April 30, 1999	Specific changes to the SDLC Manual and memorandum to project managers. OIG meeting with the IT Council.	None	Yes

MANAGEMENT RESPONSES TO RECOMMENDATIONS

4	DIRM will reemphasize specific requirements and responsibilities to all project managers through the issuance of a memorandum by March 31, 1999. DIRM will also submit a revision to the SDLC to emphasize these polices by April 30, 1999.	April 30, 1999	Specific changes to the SDLC Manual guidelines and memorandum to project managers.	None	Yes
5	DIRM will review all existing system development contracts to ensure contracts require specific deliverables and communicate this to all oversight managers.	March 31, 1999	Specific changes to the SDLC Manual and communication to oversight managers.	None	Yes
6	DIRM will reemphasize specific requirements and responsibilities to all project managers through the issuance of a memorandum by March 31, 1999. DIRM will also submit a revision to the SDLC to emphasize these polices by April 30, 1999.	April 30, 1999	Specific changes to the SDLC Manual guidelines and memorandum to project managers.	None	Yes
7	DIRM will reemphasize specific requirements and responsibilities to all project managers through the issuance of a memorandum by March 31, 1999. DIRM will also submit a revision to the SDLC to emphasize these polices by April 30, 1999.	April 30, 1999	Specific changes to the SDLC Manual guidelines and memorandum to project managers.	None	Yes
8	DIRM will conduct a review of the identified controls over the SDLC process to determine if additional controls are warranted.	March 31, 1999	Documentation of DIRM's internal control review.	None	Yes