



SENTINEL AUDIT V: STATUS OF THE FEDERAL BUREAU OF INVESTIGATION'S CASE MANAGEMENT SYSTEM

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EXECUTIVE SUMMARY

In March 2006, the Federal Bureau of Investigation (FBI) announced that it had awarded a contract to Lockheed Martin Services, Incorporated, (Lockheed Martin) to develop Sentinel, its new information and case management system. The cost of Lockheed Martin's contract, broken down into four phases, was \$305 million, and the FBI estimated that it would cost an additional \$120 million to staff and administer the FBI's Sentinel Program Management Office (PMO), which placed the total estimated cost of Sentinel at \$425 million. The initial schedule for the Lockheed Martin contract called for the project to be completed in December 2009.

The Sentinel program will integrate commercial off-the-shelf (COTS) components and is intended to provide the FBI with an electronic information and case management system that includes records management, workflow management, evidence management, search and reporting capabilities, and information sharing with other law enforcement agencies and the intelligence community. According to the FBI, "Sentinel will strengthen the FBI's capabilities by replacing its primarily paper-based reporting system with an electronic system designed for information sharing. Sentinel will support our current priorities, including our number one priority: preventing terrorist attacks."¹

In June 2007, the FBI announced that it had fully deployed Phase 1 of Sentinel, providing FBI employees with user-friendly, web-based access to information currently in the FBI's Automated Case Support system (ACS), as well as improved search capabilities. Phase 1 of Sentinel also featured a personal workbox, which summarizes a user's cases and leads, and a squad workbox, which helps supervisors manage resources.²

¹ FBI Press Release entitled *FBI Announces Award of Sentinel Contract*, March 16, 2006.

² A lead is a request from an FBI field office or a headquarters division for assistance in an investigation.

OIG Audit Approach

The Department of Justice Office of the Inspector General (OIG) is performing audits of the Sentinel project at the request of the FBI Director and congressional appropriations and oversight committees. This audit is the fifth in a series of audits that the OIG has conducted to evaluate the FBI's progress in developing and implementing Sentinel.

In our fourth audit, we reported that the FBI resolved most of the concerns we had identified in our first three Sentinel audits. However, in our fourth audit we identified the following areas that we believed warranted continued monitoring: (1) identification of the data that will be stored in Sentinel, (2) the data collection process, (3) identification of the paper forms that will be replaced with electronic forms, and (4) identification of the statistics that will be stored in Sentinel and how those statistics will be collected.

The objectives of this current audit, the fifth in our ongoing review of Sentinel's progress, were to: (1) evaluate the FBI's implementation of Phase 2 of the Sentinel project, including the project's cost, schedule, and performance; and (2) assess the FBI's progress in resolving concerns identified in the OIG's previous Sentinel audits. Future OIG audits will continue to examine the progress of Sentinel over its remaining phases and assess whether Sentinel's cost, schedule, performance, and technical benchmarks are being met.

We conducted our audit work at FBI headquarters in Washington, D.C., and at the FBI Sentinel PMO in McLean, Virginia. To perform our audit, we interviewed officials from the FBI, the Sentinel PMO, and the Department of Justice (Department). We reviewed documents related to the Sentinel contract; cost and budget documentation; and Sentinel plans, processes, and guidelines. Appendix I contains a more detailed description of our audit objectives, scope, and methodology.

OIG Results in Brief

In this audit, we identified several areas of concern with the overall progress of Sentinel and the implementation of Phase 2. Since the issuance of our last report in December 2008, the FBI's estimate of Sentinel's overall cost has not changed and remains at \$451 million.³ However, we found that

³ U.S. Department of Justice Office of the Inspector General, *Sentinel Audit IV: Status of the Federal Bureau of Investigation's Case Management System*, Audit Report 09-05 (December 2008).

the portions of Sentinel's Phase 2, delivered as of July 1, 2009, did not provide significant additional functionality to users as initially planned. The FBI and Lockheed Martin encountered significant challenges deploying new electronic versions of forms used by FBI agents during investigations that functioned as intended and met user requirements. As a result, the FBI adopted a new approach to developing forms and has replanned the remainder of Phase 2.

Originally, the FBI estimated that the development of Phase 2 of Sentinel would be completed in July 2009 at a cost of \$137 million. As of August 2009, the FBI and Lockheed Martin agreed to revise the project's schedule, increase Lockheed Martin's cost to develop Phase 2 to \$155 million, and update the remaining costs for Phases 3 and 4. The revised schedule extends the estimated completion date for Phase 2 to October 2009, 3 months later than previously reported.⁴ Consequently, the overall project completion date has been extended to September 2010, 3 months later than we previously reported and 9 months later than originally planned. In addition, the FBI plans to reallocate costs from other project areas, including the management risk reserve, to offset the \$18 million increase in Phase 2 development costs. Also, as a result of the replanning of the remainder of Phase 2, some of the deliverables originally scheduled for Phase 2 have been deferred to later phases of the project. While the FBI and Lockheed Martin agreed to the final schedule and remaining costs for Phases 3 and 4, the FBI's Acquisition Review Board has decided not to fully fund Sentinel's Phase 3 until Phase 2 is complete.⁵

In addition to delays in developing new parts of Sentinel, FBI employees have expressed concerns about the current operation of Sentinel. Specifically, users frequently complained about the system's slow response to requests for information. However, we found that while the concerns have been expressed in relation to Sentinel, the slow response times are primarily caused by the FBI's aging network architecture, which was last upgraded in 2002. In March 2009 the FBI began an upgrade of its computer network that is estimated to cost \$39 million and that is planned to be

⁴ While the FBI expects to accept delivery of Phase 2 in October 2009, it does not expect to deploy Sentinel's Phase 2 capabilities to all users until December 2009.

⁵ The cost and schedule revision agreement between the FBI and Lockheed Martin occurred after we completed our fieldwork. We will review the planning and implementation of Phases 3 and 4 in future audits.

The purpose of the Acquisition Review Board is to ensure that the FBI has a sound plan for approaching its major procurement actions. The Acquisition Review Board must approve acquisition plans for purchases with an estimated cost of \$5 million or more.

completed by December 2009. According to the FBI, the network upgrade should improve Sentinel's response time.

Finally, due to the aggressive schedule, scope, and importance of Sentinel's implementation, the project requires a highly skilled and integrated project management staff. We have concerns with the staffing of the project because of a recent increase in turnover among project staff members, vacancies within the Sentinel PMO, and because the Sentinel PMO Staffing Plan does not reflect the current staffing levels or skills needed for the project.

In this report, we make six recommendations to better manage project costs and assist the FBI in ensuring the success of the Sentinel case management system. These recommendations include filling vacancies at the Sentinel PMO, increasing user involvement in the development of Sentinel, and developing a goal for Sentinel's response time to user inputs.

Our report also contains detailed information on the results of our review of Sentinel's development and implementation. The remaining sections of this Executive Summary describe in more detail our audit findings.

Overall Project Status

The second of Sentinel's four phases is currently under development. While the FBI has not revised the overall cost estimate for Sentinel since we issued the Sentinel IV report in December 2008, the revised schedule extends the estimated completion date for Phase 2 by 3 months, and the project's overall completion date by 3 months.

Project Cost

At the inception of the project, the FBI estimated Sentinel's total cost would be \$425 million, including \$305 million for Lockheed Martin to develop and maintain Sentinel and \$120 million for the FBI's Sentinel PMO operations, independent verification and validation (IV&V), and a management risk reserve to fund unforeseen changes in the project's scope. After Phase 1 was deployed, the FBI and Lockheed Martin replanned the remaining phases of Sentinel and the FBI's estimate of Sentinel's total cost increased to \$451 million. As of May 2009, Sentinel had incurred approximately \$290.4 million or 64.4 percent of its projected \$451 million cost. As of August 2009, FBI officials stated that the \$451 million estimate was still accurate, but the allocation of planned expenses had changed with

the planned value of Lockheed Martin's contract expected to increase by \$6.3 million.

Project Schedule

At the time the FBI awarded Lockheed Martin the contract to develop Sentinel, Lockheed Martin planned to complete Phase 4 by December 2009. However, after the completion of Phase 1 of Sentinel in June 2007, the FBI directed Lockheed Martin to redevelop a plan for the project that would address the technical and managerial challenges encountered during development of Phase 1. This replanning moved the completion of Phase 4 to May 2010, 5 months later than originally planned.⁶ In June 2009, Lockheed Martin worked with the FBI to develop an engineering change proposal that included detailed schedule estimates for Phases 3 and 4. Based on these detailed estimates, the FBI extended the completion date of Phase 4 again, to September 2010, 3 months later than we previously reported, and 9 months later than originally planned in June 2006.

Requirements and Capabilities

During the replanning efforts, the FBI reallocated Sentinel's planned requirements among its four phases. In most cases, the Sentinel PMO and Lockheed Martin have moved the completion, or full satisfaction, of requirements to earlier phases than originally planned. FBI officials stated that this type of reallocation reduces the FBI's risk because moving requirements to earlier phases provides an early warning of potential problems with the design or performance of Sentinel.

In addition to the reallocation of Sentinel's requirements, other requirements have been added to the project. In September 2008, the Department of Justice issued new Attorney General Guidelines on Domestic FBI Operations (AG Guidelines) that included policy on assessing complaints received by the FBI concerning reported criminal activity. For example, requirements necessary to implement the new complaint assessment process mandated by the AG Guidelines were not included in the original Sentinel System Requirements Specifications, so the new AG Guidelines effectively added requirements to Sentinel and expanded the scope of the project. Lockheed Martin estimated that the new requirements would cost about \$3.1 million to implement. However, the FBI rejected Lockheed Martin's proposal because, according to the Sentinel PMO, Lockheed Martin's

⁶ Based on documentation the FBI provided us, our December 2008 report on Sentinel's progress states that the replanning moved the completion of Phase 4 to June 2010. In October 2009, the FBI provided us with documentation showing that the replanning had moved the completion of Phase 4 to May 2010.

proposal included items that were not needed. As of August 2009, the FBI has not determined the cost of updating the requirements to ensure that Sentinel complies with the revised AG Guidelines. As a result, the Sentinel PMO plans to ask Lockheed Martin for an estimate on a more precisely defined scope of work.

Phase 2 Status

Phase 2 of Sentinel, which is currently under development, consists of four segments, the first three of which have been completed. When the FBI initiated development of Phase 2, it expected the second phase of Sentinel to provide: (1) a portal to Sentinel, with additional enhancements made during the phase; (2) eight electronic forms, as well as an automated workflow, to support the flow of electronic documents through the review and approval process; (3) migration of FBI administrative case records; and (4) an automated workflow process for managing future administrative case files.⁷ In addition, Phase 2 was expected to enhance Sentinel's infrastructure.

The expected cost, schedule, and scope of Phase 2 have increased since our last audit. The FBI expects that Phase 2 will be delivered on October 16, 2009, 3 months later than scheduled and cost \$155 million to develop, \$18 million more than budgeted at the beginning of the phase. We identified three major factors that contributed to the schedule delay and cost increase. First, during Segments 2 and 3 Lockheed Martin and the Sentinel PMO encountered problems developing Sentinel's electronic forms and their supporting automated workflows. Second, the successful development of Sentinel is dependent on successful development and deployment of another FBI IT system called the Enterprise Directory Services (EDS).⁸ When the FBI deployed the system in January 2009, EDS did not perform as intended and did not deliver the planned security requirements for Phase 2. Third, the FBI reallocated requirements from Phases 3 and 4 to Phase 2, Segment 4.

The FBI accepted delivery of Phase 2, Segment 3 of Sentinel in April 2009. This segment delivered: (1) interfaces to six FBI IT systems;

⁷ The Sentinel Enterprise Portal will allow users to access multiple FBI IT systems with a single sign-on. The portal will also provide a central location for links to other FBI applications.

⁸ EDS is part of a portfolio of security services entitled the Identity Access Management (IAM) initiative that the FBI plans to implement. IAM will identify users within a system and control their access to information within that system through an established identity that will grant a user access to specific resources based on specific policies and the permission level assigned to the user.

(2) enhanced system administration; (3) portions of Sentinel's records management capability; (4) a user-friendly method of sending and receiving tasks; and (5) the ability to extract administrative case data from ACS. However, while Lockheed Martin completed work on eight electronic forms and their corresponding workflows, the FBI did not deploy the forms and workflows because EDS, on which Sentinel relies, did not function as intended.

When the FBI could not deploy Sentinel's eight electronic forms and their corresponding automated workflows during Segment 3, it revised Segment 4 to include the deployment of the forms. However, developing electronic forms and automated workflows that met user expectations continued to be a challenge during Segment 4. On June 17, 2009, after spending \$810,000 to develop Sentinel forms using a software package intended specifically for that purpose, the Sentinel PMO requested approval from the Department's Chief Information Officer to rebaseline Segment 4 and incorporate a new approach to develop electronic forms and their associated automated workflows.⁹ The Segment 4 completion date, which had already been extended to October 16, 2009, did not change under this new plan, and the segment is still expected to include all of the significant case management capabilities and data migration originally planned. However, five of the eight electronic forms and their supporting workflows, which had originally been scheduled for Phase 2, have been deferred to later phases of the project while the other three are planned for deployment in Phase 2, Segment 4.

In addition to the changes in the cost, schedule, and scope of Phase 2, we are concerned that the lack of progress the FBI has made in planning for the migration of administrative case data from ACS to Sentinel will delay the completion of Phase 2, Segment 4 and potentially increase Sentinel's overall cost.

Phase 2 User Acceptance and System Performance

When Sentinel is fully implemented, the FBI will change from an organization that relies on paper-based processes and case files to one that uses automated workflows and electronic case files. To aid in this transformation, the Sentinel PMO has solicited feedback from FBI employees on Sentinel's current operations. The most frequent

⁹ Rebaselining, an earned value management term, revises a project's planned baselines and eliminates cost and schedule variances. Rebaselining usually occurs when a project's progress deviates significantly from the original plan and the remaining time and funds are not sufficient to complete the project.

complaint about Sentinel obtained through this feedback is that Sentinel responds too slowly to user requests.

We found that the FBI's outdated network architecture that provides the infrastructure to transmit Sentinel data is the most significant contributor to Sentinel's slow response times. While not included as part of the Sentinel project costs, the FBI is currently spending \$39 million to improve and simplify its network. This upgrade is vital to Sentinel's performance and could affect whether users rely on Sentinel and its automated workflows to perform their daily tasks once it is fully implemented.

In addition, the Sentinel Measurement Plan requires Lockheed Martin to submit its evaluation of Sentinel metrics, which provide a means for measuring the program's development, in a monthly Measurement and Defect Report. We found several instances where Lockheed Martin did not provide the reports, or the reports included outdated information. Without accurate data, the FBI cannot adequately monitor Sentinel's performance or assess Lockheed Martin's progress toward meeting the FBI's requirements for the completed version of Sentinel.

Actions Taken on Previous OIG Recommendations

The FBI has taken steps to resolve the concerns we identified during our previous audits regarding the FBI's management of Sentinel. Based on the FBI's actions, we have closed 30 of the 31 recommendations we made in our previous four Sentinel reports. The FBI agrees with the remaining recommendation but has not yet implemented all the steps to address the recommendation.

Conclusion and Recommendations

We expressed concern in previous audits about the aggressiveness of Sentinel's schedule. The revised schedule for Phases 3 and 4, which projects that Phase 4 will be completed on September 20, 2010, was developed after our field work for this audit was completed so we did not have an opportunity to analyze the rationale for the revision. However, based on our understanding of the project, we believe that the revised schedule is more realistic and that extending the completion of Phase 4 by 3 months increases the likelihood that Sentinel will meet users' needs when it is completed.

We found that the FBI's development of Phase 2 will cost more and take longer than estimated at the beginning of the phase. As of June 2009, the FBI estimated Phase 2 would be completed on October 16, 2009,

3 months later than scheduled, and cost \$18 million more than initially budgeted. These increases in time and expense occurred because Lockheed Martin and the FBI encountered problems developing new electronic forms and automated workflows that met both users' needs and functioned as intended. The failure to meet users' needs was due, in part, to limited user involvement during the development phase. While it is too early for us to determine whether the Sentinel PMO's new approach to developing forms will be successful, we believe that the Sentinel PMO's use of an incremental approach has helped reduce the cost of problems encountered by the FBI and allowed it to change approaches more quickly and its new forms development approach appears promising. Regardless of the approach eventually adopted to develop the forms, user involvement is vital to the successful development of these new forms.

Additionally, Sentinel's Phase 2 development was dependent on EDS being able to meet its access control requirements. Because EDS failed when the FBI deployed it in January 2009, Sentinel was unable to meet some of its Phase 2 access control requirements and continues to rely on ACS to perform security functions such as user identification. Until EDS can perform the necessary access control functions, Sentinel will be relying on ACS, the antiquated system it is designed to replace.

To help guide the development of the final phases of Sentinel, the Sentinel PMO solicited feedback on Sentinel's current functionality. The most frequent complaint about Sentinel was that it responded too slowly to user requests, an outcome attributable to the FBI's outdated network architecture. To support Sentinel and other FBI IT systems, the FBI is currently investing approximately \$39 million to upgrade its network architecture. We believe this network upgrade is vital to the effective use of Sentinel.

In this report we make six recommendations that, if implemented, will assist the FBI in better managing project costs and ensuring the success of the Sentinel case management system. These recommendations include fully staffing the Sentinel PMO, increasing user involvement in Sentinel's development, and developing a goal for Sentinel response times to user inputs.

LIMITED OFFICIAL USE

TABLE OF CONTENTS

INTRODUCTION 1
 Sentinel 5
 Sentinel’s Phased Approach 6
 Earned Value Management System 6
 Prior Reports 7

FINDINGS AND RECOMMENDATIONS 8
 Finding 1: Overall Project Status 8
 Sentinel Costs 8
 Sentinel Schedule 10
 Requirements and Capabilities 11
 Annual EVM Surveillance Review 12
 Sentinel PMO Staffing 13
 Conclusion 16
 Recommendations 16

 Finding 2: Phase 2 Status 17
 Phase 2 Overview 18
 Phase 2 Status 18
 Segment 2 19
 Segment 3 22
 Segment 4 25
 Conclusion 27
 Recommendations 28

 Finding 3: Phase 2 User Acceptance and System Performance 29
 Phase 2 User Acceptance 29
 Operations and Maintenance Activities 32
 Phase 2 System Performance Metrics 33
 Conclusion 34
 Recommendations 35

 Finding 4: Actions Taken on Previous OIG Recommendations.. 36
 Conclusion 37

STATEMENT ON INTERNAL CONTROLS 38

STATEMENT ON COMPLIANCE WITH LAWS
AND REGULATIONS 39

APPENDIX I: OBJECTIVES, SCOPE, AND METHODOLOGY 40

APPENDIX II: ACRONYMS	41
APPENDIX III: SENTINEL ELECTRONIC FORM DETAIL.....	42
APPENDIX IV: CLOSED RECOMMENDATIONS FROM PRIOR OIG REPORTS	45
APPENDIX V: SENTINEL PROGRAM MANAGEMENT OFFICE STAFF POSITIONS AND RESPONSIBILITIES	48
APPENDIX VI: FEDERAL BUREAU OF INVESTIGATION'S RESPONSE TO THE DRAFT REPORT	54
APPENDIX VII: OFFICE OF THE INSPECTOR GENERAL ANALYSIS AND SUMMARY OF ACTIONS NECESSARY TO CLOSE THE REPORT	58

INTRODUCTION

On March 16, 2006, the Federal Bureau of Investigation (FBI) announced that it had awarded a contract to Lockheed Martin Services, Incorporated (Lockheed Martin) to develop the Sentinel information and investigative case management system. The cost of the four phases of the Lockheed Martin contract totaled \$305 million, and the FBI estimated that it would cost an additional \$120 million to staff the FBI's Sentinel Program Management Office (PMO), provide contractor support, and establish a management reserve for contingencies, bringing the total estimated cost of the Sentinel project to \$425 million. The initial schedule for the Lockheed Martin contract called for all phases to be completed in December 2009, or 45 months from the start of work.

The Sentinel project, which is based on commercial off-the-shelf (COTS) components, is intended to provide the FBI with a web-enabled electronic case management system that includes records management, workflow management, evidence management, search and reporting capabilities, and information sharing capabilities with other law enforcement agencies and the intelligence community.¹⁰

On June 19, 2007, the FBI announced that it had fully deployed Phase 1 of Sentinel. The goal of this first phase of the project was to provide FBI employees with user-friendly, web-based access to information currently in the FBI's antiquated Automated Case Support system (ACS).¹¹ Phase 1 featured a personal workbox that summarizes a user's cases and leads.¹² It also provided user-friendly search capabilities and a squad workbox, which allows supervisors to better manage their resources and assign leads with the click of a mouse.

Sentinel's Phase 2 development and implementation is in process. It is expected to provide: (1) a portal to Sentinel, with additional enhancements during the phase; (2) eight electronic forms and an automated workflow to support the flow of electronic documents through the

¹⁰ Workflow is the automation of a business process, in whole or part, during which documents, information, or tasks are passed from one participant (human or machine) to another for action, according to a set of procedural rules.

¹¹ ACS is the FBI's current case management system. Deployed in 1995, ACS is a mainframe system.

¹² A lead is a request from any FBI field office or headquarters for assistance in the investigation of a case.

review and approval process; (3) migration of FBI administrative case records from ACS; and (4) an automated workflow process for managing future administrative case files.¹³ In addition, Phase 2 is expected to enhance Sentinel's infrastructure, which will result in new capabilities unseen by the user, such as the ability to backup and recover data.

In Phases 3 and 4 of Sentinel, the FBI plans to migrate existing investigative case data from ACS to Sentinel. Also, these phases will add interfaces between Sentinel and other FBI systems and implement additional access controls. Finally, Sentinel will provide a workflow for all types of cases while adding additional forms, such as the Terrorist Threat or Suspicious Activity Report, to the library of electronic forms available to users.

Given the importance of the Sentinel project, the FBI Director and congressional appropriations and oversight committees asked the Department of Justice Office of the Inspector General (OIG) to review and report on the progress of the FBI's development of Sentinel. This is the fifth OIG report on Sentinel. The first four Sentinel reports focused on the planning and development of Phases 1 and 2, the FBI's processes and controls for managing Sentinel, and the contract with Lockheed Martin to develop Sentinel. This report examines the changes made to Sentinel's planning and development since the implementation of an incremental development approach at the conclusion of Phase 1, completion of the first of the four segments of Phase 2, and the progress made by the FBI in resolving concerns identified in our previous audits.¹⁴

Over the past few years, the OIG and others have reviewed various aspects of the FBI's information technology (IT) infrastructure and noted the critical need for the FBI to modernize its case management system. In previous reports, the OIG concluded that current FBI systems do not permit agents, analysts, and managers to readily access and share case-related information throughout the FBI, and without this capability the FBI cannot perform its critical missions as efficiently and effectively as it should.¹⁵

¹³ The Sentinel Enterprise Portal will allow users to access multiple FBI IT systems with a single sign-on. The portal will also provide a central location for links to other FBI applications.

¹⁴ Under the incremental development approach, each phase of a project is broken down into segments, and the segments are further broken down into increments. The goal of this approach is to provide more frequent deliveries to the user during the development of the project.

¹⁵ For a more complete discussion of the OIG's reports on Sentinel, see the Prior Reports section on page 7.

The FBI's attempt to move from a paper-based to an electronic case management system began in mid-2001 with the Trilogy project, which consisted of three components: (1) hardware and software; (2) communications network; and (3) the Virtual Case File, which was supposed to replace the FBI's five most important investigative applications, including ACS.¹⁶ In late 2004, after about 3 years of development, the FBI commissioned the Aerospace Corporation to perform a study evaluating the functionality of COTS and government off-the-shelf technology to meet the FBI's case management needs. The Aerospace Corporation followed this study with an independent verification and validation (IV&V) report on the Virtual Case File in January 2005, which recommended that the FBI pursue a COTS-based, service-oriented architecture.¹⁷

In February 2005, the OIG issued a report on the Trilogy project questioning the FBI's ability to complete and deploy the Virtual Case File.¹⁸ At the end of April 2005, the FBI reported that it had terminated work on the Virtual Case File due to the lack of progress on its development. The FBI said that the "marketplace" had changed significantly since the Virtual Case File development had begun and appropriate COTS products, which were previously unavailable, were now available.

¹⁶ The first two components of Trilogy were completed in April 2004 at a cost of \$337 million, almost \$100 million more than originally planned. The FBI spent approximately \$170 million on the Virtual Case File project before the project was terminated.

¹⁷ IV&V is a standard information technology investment management (ITIM) process whereby an independent entity assesses the system as it is developed in order to evaluate if the software will perform as intended. A service-oriented architecture is a collection of services that communicate with each other. The communication can involve a simple data exchange or two or more services coordinating on an activity.

¹⁸ U.S. Department of Justice, Office of the Inspector General, *The Federal Bureau of Investigation's Management of the Trilogy Information Technology Modernization Project*, Audit Report 05-07 (February 2005).

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²¹ U.S. Department of Justice, Office of the Inspector General, *The Federal Bureau of Investigation's Management of the Trilogy Information Technology Modernization Project*, Audit Report 05-07 (February 2005).

Sentinel

Similar to what the FBI had envisioned for the Virtual Case File, Sentinel is intended to not only provide a new electronic case management system, transitioning the FBI files from paper-based to electronic records, but also streamline processes for maintaining investigative lead and case data. In essence, the FBI expects Sentinel to be an integrated system supporting the processing, storage, and management of information to allow the FBI to more effectively perform its investigative and intelligence operations.

According to the FBI, the use of Sentinel in the future will depend on the system's ability to adapt to evolving investigative and intelligence business requirements. Therefore, the FBI is developing Sentinel using a flexible software architecture that should permit economical and efficient changes to software components as needed. According to the FBI, a key element of the Sentinel architecture contributing to achieving this flexibility is the use of COTS and government-off-the-shelf applications software.

FBI agents are required to document investigative activity and information obtained during an investigation. From a case's inception to its conclusion, the case file is the central system for holding these records and managing investigative resources. FBI agents and analysts currently create paper files, making the process of adding a document to a case file a highly paper-intensive, manual process. Files for major cases can contain over 100,000 documents, leads, and evidence items.

Currently, the documentation within case files is electronically managed through ACS, which maintains electronic copies of most documents in the case file and provides references to documents that exist in hardcopy only. However, ACS is severely outdated, cumbersome to use, and does not facilitate the searching and sharing of information. As a result, agents and analysts cannot easily acquire and link information across the FBI.

In contrast, the FBI expects Sentinel to greatly enhance the usability of case files for agents and analysts, both in terms of adding information to case files and more efficiently searching for case information. FBI supervisors, reviewers, and others will also be able to review, comment on, and approve the insertion of documents into appropriate FBI electronic files using Sentinel.

Sentinel's Phased Approach

As originally conceived, the FBI expected to develop the Sentinel program in four partially overlapping phases, each lasting approximately 12 to 16 months. Each phase, when deployed, was to provide a stand-alone set of capabilities upon which subsequent phases would be added to complete the Sentinel program.²²

As a result of lessons learned during the development of Phase 1, the FBI and Lockheed Martin replanned the remaining phases of Sentinel before developing Phase 2. During this replanning, the FBI and Lockheed Martin adopted an incremental development methodology for Sentinel that divided Phases 2 through 4 into segments, which were further divided into increments. One of the major reasons for switching to the incremental development model was the FBI's desire to deliver new capabilities to users approximately every 3 to 6 months.

Earned Value Management System

Earned Value Management (EVM) is a tool that measures the performance of a project by comparing the variance between established cost, schedule, and performance baselines to what is actually taking place. These variances are measured periodically to give project managers a timely perspective on the status of a project. EVM reporting is an important risk-management tool for a major IT development project such as Sentinel because it can provide an early warning when a project is heading for trouble.

In August 2005, the Office of Management and Budget (OMB) issued a memorandum requiring all federal agency Chief Information Officers to manage and measure all major IT projects using an EVM system. Additionally, all agencies were required to develop policies for full implementation of EVM on IT projects by December 31, 2005. The Department of Justice (Department) issued its EVM policy in July 2006. In response to these requirements, the FBI developed a Sentinel Program EVM Capability Implementation Plan in August 2006 and subsequently acquired a tool to implement an EVM system for the Sentinel project.

²² For a detailed description of the capabilities originally intended for each of the four phases, see pages 6 and 7 of the U.S. Department of Justice Office of the Inspector General's previous report on Sentinel. *Sentinel Audit IV: Status of the Federal Bureau of Investigation's Case Management System*, Audit Report 09-05 (December 2008).

Prior Reports

Since 2006, the OIG has issued four reports on Sentinel's progress. The fourth OIG report on Sentinel, issued in December 2008, examined: (1) the lack of performance measures for Phase 1 of the Sentinel project, (2) Sentinel's adoption of an incremental development methodology, (3) increases in the project's cost and schedule, and (4) the resolution of concerns identified in the OIG's previous Sentinel audits.²³ The OIG's fourth audit report found that the FBI had resolved most of the concerns identified in its first three Sentinel audits. However, we identified the following areas that warranted continued monitoring: (1) identification of the data that will be stored in Sentinel, (2) the data collection process, (3) identification of the paper forms that will be replaced with electronic forms, and (4) identification of the statistics that will be stored in Sentinel and how those statistics will be collected.

Over the last few years, the Government Accountability Office (GAO) has also issued several reports examining the FBI's efforts to develop a new case management system. Most recently, in September 2008 the GAO issued a report on the FBI's acquisition methods for Sentinel. The GAO determined that the FBI was managing Sentinel requirements by making sure that changes to established baselines were justified and approved on the basis of costs, benefits, and risks; and the FBI was ensuring that different levels of requirements and related design specifications and test cases were properly aligned with one another. In addition, the GAO found that the FBI was analyzing commercially available product alternatives based on requirements, costs, and other factors to ensure that the most cost-effective mix of products was being used to minimize requirement gaps. The GAO also noted that the FBI was taking steps to understand the dependencies among the various commercial products that would make up Sentinel, thus ensuring that they can interoperate effectively. Finally, the GAO noted that the FBI was taking steps to ensure that Sentinel integration with FBI legacy systems would occur when needed. The GAO concluded that, collectively, those acquisition methods should increase the probability that Sentinel would meet its cost, schedule and performance goals.²⁴

²³ For a summary of our first three Sentinel reports, see pages 10 and 11 of the U.S. Department of Justice Office of the Inspector General's previous report on Sentinel. *Sentinel Audit IV: Status of the Federal Bureau of Investigation's Case Management System*, Audit Report 09-05 (December 2008).

²⁴ U.S. Government Accountability Office, *Information Technology: FBI is Implementing Key Acquisition Methods on Its New Case Management System, but Related Agencywide Guidance Needs to Be Improved*, GAO-08-014 (September 2008).

FINDINGS AND RECOMMENDATIONS

FINDING 1: OVERALL PROJECT STATUS

Since our last report in December 2008, the FBI's estimate of Sentinel's total cost of \$451 million has not changed. As of May 2009, Sentinel's reported costs totaled approximately \$290.4 million or 64.4 percent of the overall projected cost. As of August 2009, however, the FBI estimated that Phase 4, the last phase of Sentinel's development, will be completed on September 20, 2010, 3 months later than we previously reported and 9 months later than originally planned in June 2006. Moreover, the completion date for Phase 2 was also re-scheduled to October 16, 2009, 3 months later than previously scheduled because of challenges the FBI encountered in deploying electronic forms.²⁵ In addition, the FBI has limited funding for Phase 3 until Phase 2 is completed in order to ensure program continuity and retention of contractor personnel. As we previously reported, the Sentinel Program Management Office (PMO) requires a highly skilled and integrated staff to successfully oversee Sentinel's development. However, from January 2008 to May 2009 the number of vacancies has more than doubled to 6 out of 77 positions.

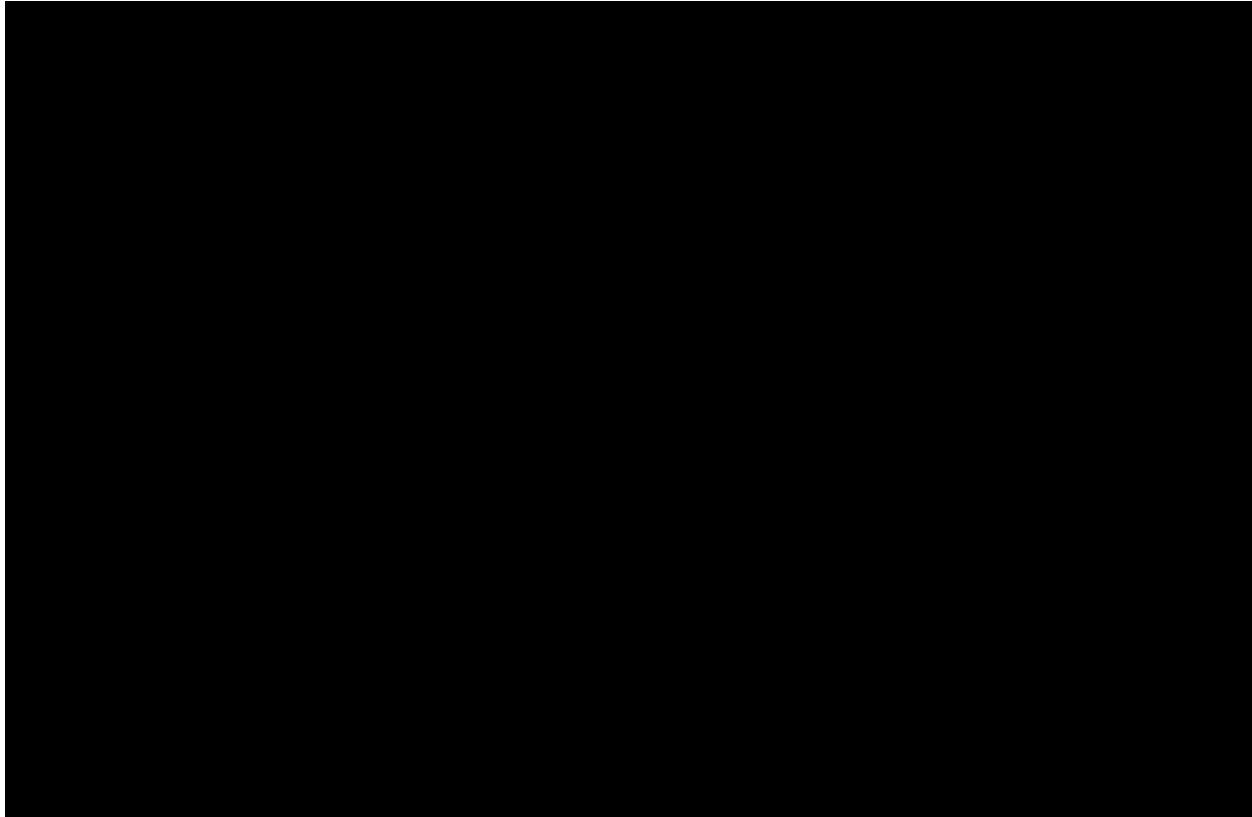
Sentinel Costs

At Sentinel's inception in March 2006, the FBI reported that Sentinel would cost a total of \$425 million, which included \$305 million for Lockheed Martin to develop and maintain Sentinel, and \$120 million for Sentinel PMO operations to perform project IV&V and to establish a risk reserve fund for unforeseen changes to the project's scope. After the completion of Phase 1, the FBI and Lockheed Martin replanned the remaining phases of Sentinel and, as of November 2007 the FBI's estimate for the total cost of Sentinel increased to \$451 million. According to FBI officials, as of August 2009 Sentinel's costs are still expected to total \$451 million. The FBI's January 2009 spend plan reallocated approximately \$6.75 million from the Sentinel PMO, Risk Management Reserve, Strategic Planning, and IV&V to the Sentinel Development and Operations and Maintenance (O&M) categories. The reallocation also increased the planned value of Lockheed Martin's

²⁵ While the FBI expects to accept delivery of Phase 2 in October 2009, it does not expect to deploy Sentinel's Phase 2 capabilities to all users until December 2009.

contract by approximately \$6.3 million. Table 1 shows the changes in the Sentinel spend plans from November 2007 to January 2009 by category.

TABLE 1: SENTINEL SPEND PLAN BY CATEGORY



Source: FBI

In June 2009, Lockheed Martin submitted an engineering change proposal (ECP) that included detailed cost estimates for Phases 3 and 4. While the FBI and Lockheed Martin have agreed on the costs and schedules for Phases 3 and 4, the FBI has not fully accepted the ECP. Under the proposal, the development of Phase 3, which began in August 2009, overlapped with the development of Phase 2. However, the FBI's Acquisition Review Board decided in July 2009 to not fully fund the ECP and only funded the first increment of Phase 3.²⁶ The remaining increments of Phase 3 will not be funded until Phase 2 is completed. In the ECP, the proposed cost to develop the remaining phases of Sentinel, Phases 3 and 4, increased by \$4.88 million or 7.3 percent. The ECP also included reallocation of requirements between Phases 3 and 4 and, as a result, costs have been transferred between the phases. The cost for Phase 3 increased 50 percent

²⁶ The purpose of the Acquisition Review Board is to ensure that the FBI has a sound plan for approaching its major procurement actions. The Acquisition Review Board must approve acquisition plans for purchases with an estimated cost of \$5 million or more.

from \$33.51 million to \$50.36 million in the ECP, while the proposed cost for Phase 4 decreased 36 percent from \$33.37 million to \$21.4 million.

In addition to reallocating requirements between the phases, the FBI revised the Sentinel spend plan. The revisions transferred funds from Phases 1 and 2 to Phase 3 and the operation and maintenance of Sentinel. According to FBI officials, the new incremental development approach to Sentinel required additional resources for Sentinel operations and maintenance prior to the completion of its development.

Sentinel Schedule

Based on Lockheed Martin’s June 2009 ECP, the FBI estimates Phase 4 will be completed in September 2010, 3 months later than we reported in our December 2008 report and 9 months later than originally planned in June 2006. Phase 3 development was scheduled to begin in April 2009, but did not begin until August 2009. As a result, and because several Phase 4 requirements were added to Phase 3, the scheduled completion date for Phase 3 was delayed by 4 months from the date planned at the beginning of Phase 2. In June 2009, the completion date for Phase 2 was revised to October 16, 2009, 3 months later than previously reported. (See Finding 2 for a more detailed discussion of the Phase 2 schedule.) Table 2 below shows the current Sentinel schedule.

TABLE 2: SENTINEL DEVELOPMENT SCHEDULE

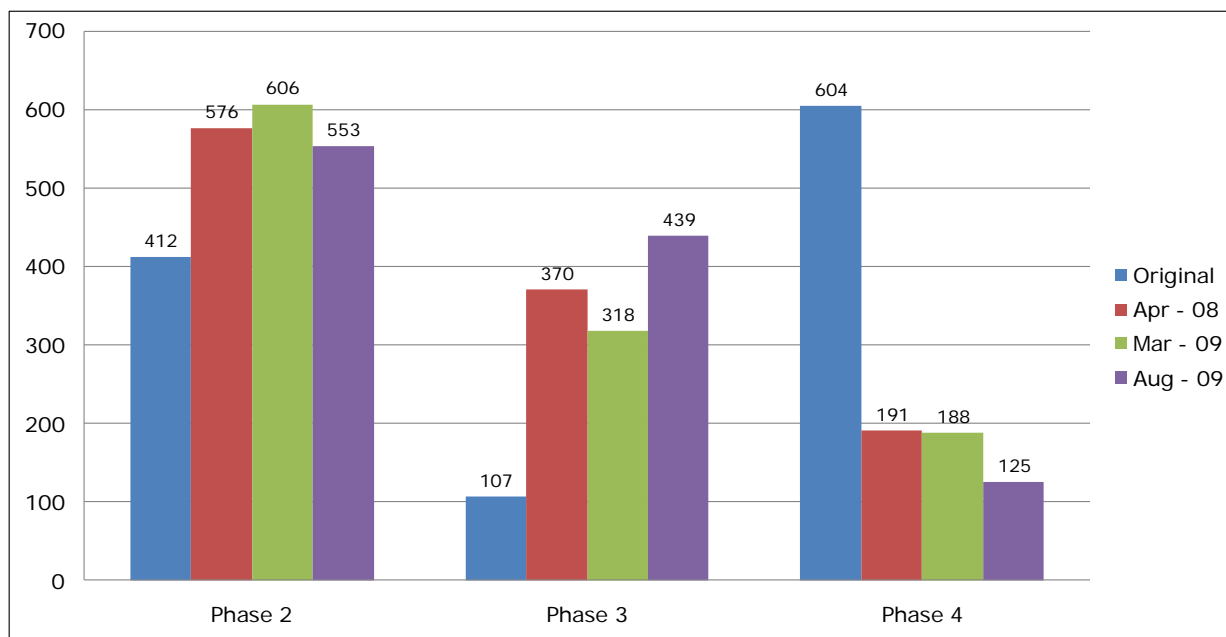
Contract Phase	Dates
Phase 1 Development	March 2006 – June 2007
Phase 1 Operations and Maintenance	May 2007 – May 2012
Strategic Plan Development	May 2007 – September 2007
Phase 2 Development	October 2007 – October 2009
Phase 3 Development	August 2009 – June 2010
Phase 4 Development	April 2010 – September 2010

Source: FBI

Requirements and Capabilities

During the course of the project, the FBI has reallocated Sentinel's planned requirements among its four phases. Generally, the Sentinel PMO moved the completion, or full satisfaction, of Sentinel's requirements to earlier phases with the intention of reducing the FBI's risk exposure created by the high number of requirements originally planned to be implemented during Phase 4. Moving requirements to earlier phases generally provides the Sentinel PMO the opportunity to address problems earlier in the development process. According to the Deputy Program Manager, the FBI's current plan moves most new development out of Phase 4. While Phase 4 will satisfy over 100 requirements, the goal of the phase is to migrate data from ACS to Sentinel and test the overall system. Table 3 below shows how the distribution of Sentinel's requirements across the remaining phases of the project has changed since its original plan.

Table 3: DISTRIBUTION OF REQUIREMENTS PLANNED TO BE FULLY SATISFIED BY PHASE



Source: FBI

Attorney General Guidelines for Domestic FBI Operations

In addition to the reallocation of requirements among the phases, additional requirements have been added to Sentinel since its inception. On September 29, 2008, the Department of Justice issued new Attorney General Guidelines for Domestic FBI Operations. Among other things, the revised guidelines enhanced the FBI's complaint assessment process. However, the

requirements necessary to implement these new enhancements were not included in the original Sentinel System Requirements Specifications, so revising the system to accommodate these new guidelines expanded the scope of the Sentinel project. Lockheed Martin estimated that the new requirements would cost about \$3.1 million to implement. The FBI rejected Lockheed Martin's proposal for how to address the AG Guidelines because, according to the Sentinel PMO, Lockheed Martin's proposal included items that were not needed. As a result, the Sentinel PMO plans to ask Lockheed Martin for an estimate on a more precisely defined scope of work.

The Sentinel PMO has not assigned development of the new requirements to a specific phase of the project because it has not received requirements and metrics data from the FBI's Corporate Policy Office and Resource Planning Office. The Sentinel Program Manager said that the results of this process will be completed before Phase 4's scheduled deployment. As of August 2009, the FBI has not determined how much the change in requirements will increase Sentinel's cost.

Annual EVM Surveillance Review

In September 2008, a team from the Department of Justice conducted an annual review of Sentinel's Earned Value Management program. The review team examined EVM data and reports and discussed EVM issues with Sentinel personnel. The team concluded that Sentinel's EVM program was in compliance with the relevant standards but recommended that the FBI review Sentinel's use of its risk management reserve and contractor award fee, review the categorization of Sentinel PMO personnel as "Level of Effort" for EVM reporting purposes, and update its EVM description. The FBI implemented these changes and the recommendations were closed by the Department's EVM review team.

Sentinel PMO Staffing

Due to the scope and importance of the project, Sentinel requires a highly skilled and integrated Sentinel PMO staff. In our previous audits, we found that there were vacancies within the Sentinel PMO and we recommended that the Sentinel PMO fill the vacancies as soon as possible to ensure Sentinel's successful development. The Sentinel Staffing Plan is the Sentinel PMO's staffing policy that establishes the authorized Sentinel PMO staff level and the skills required by each position. However, while the staffing needs of the Sentinel PMO have changed during the project, we found that the Sentinel PMO has not adjusted the staffing plan accordingly. Instead, we found that the Sentinel PMO updates its organization chart when personnel requirements change.

As of May 2009, the Sentinel PMO Organization Chart, which depicts the Sentinel PMO's current staffing level, included 77 total planned staff, one less than the 78 positions in the current staffing plan. In addition, the Sentinel PMO Organization Chart included five positions not required by the Sentinel PMO Staffing Plan and did not reflect four positions included in the Sentinel PMO Staffing Plan. Among the most significant changes made to the Sentinel PMO's staffing level were the movement of positions within the Sentinel PMO, the elimination of an engineer with oversight responsibilities in the Sentinel PMO, and the vacancy of the newly added Human Factors Engineer position.²⁷

Sentinel PMO Positions

There were several positions in the Sentinel PMO Organization Chart that were moved or deleted since development of the Sentinel PMO Staffing Plan. For example, a position under the Program Support Unit was deleted from the Sentinel PMO's Organizational Chart and renamed and aligned under the User Representative and Policy Unit. The most current PMO Staffing Plan listed the same position under the Program Support Unit, but did not list the new position title or its location. Another change involved two lead positions under the Program Support Unit that were deleted. The Program Support Unit Lead is now responsible for performing the responsibilities previously assigned to those deleted positions. As a result of these changes, the current PMO Staffing Plan did not capture the staffing levels and skill needs of Sentinel.

²⁷ Human factors engineering is the discipline of applying what is known about human capabilities and limitations to the design of products, processes, systems, and the work environment.

While we understand that the Sentinel PMO's staffing needs will change throughout the life of the project, the Sentinel PMO Organization Chart should be based on the Sentinel PMO Staffing Plan. A current staffing plan will allow Sentinel's project management to better define and plan for the staffing needed to manage Sentinel's development and implementation effectively. The Sentinel PMO agreed that the Sentinel Staffing Plan needs to be updated to assess the future resource needs of the project.

Sentinel PMO Engineer

When Sentinel adopted its incremental development approach, many of the traditional development approach steps required by the FBI's IT Life Cycle Management Directive were eliminated.²⁸ To ensure oversight of Sentinel's development, the FBI's Chief Technology Officer assigned an engineer to the Sentinel PMO at the beginning of Phase 2 to perform this function. However, the Chief Technology Officer eliminated this key oversight position early in 2009 because he believed the engineer's role at the Sentinel PMO was not well-defined, the Sentinel PMO received sufficient oversight from other organizations such as the IV&V and the Department Of Justice Investment Review Board, and the engineer was needed for higher priority projects. We believe that an engineer from the FBI's Office of the Chief Technology Officer would enhance oversight of the Sentinel program because that engineer would have a much more defined technical knowledge of the project and access to channels of communication to both receive and deliver project information unavailable to the OIG or the GAO. PMO officials told us that the Office of the Chief Technology Officer changed its approach to monitoring and now performs spot checks rather than having staff dedicated to Sentinel.

Human Factors Engineer

The Sentinel PMO's Human Factors Engineer is responsible for ensuring that Sentinel is user-friendly and that the final product effectively satisfies user requirements. The Sentinel PMO added this position in 2008, but as of May 2009 it was vacant. While Lockheed Martin has Human Factors Engineers working on Sentinel, we believe that an independent Human Factors Engineer assigned to the Sentinel PMO would provide the FBI with greater assurance that the system Lockheed Martin develops meets the needs of the FBI.

²⁸ The Life Cycle Management Directive (LCMD) provides processes that guide the development of IT projects. The LCMD covers the entire IT system life cycle, including planning, acquisition, development, testing, and operations and maintenance. As a result, the LCMD provides the framework for standardized, repeatable, and sustainable processes and best practices in developing IT systems.

Sentinel PMO Vacancies and Staff Turnover

As of May 2009, the Sentinel PMO had six vacancies: (1) Human Factors Engineer, (2) EVM Analyst, (3) Intelligence Analyst, (4) Intelligence Support Specialist, (5) Supervisory Special Agent, and (6) Networking Systems Engineer. As previously discussed, we believe that a Human Factors Engineer is a prudent addition to the Sentinel PMO staff. For the Sentinel PMO to accurately report Sentinel's progress, we also believe that an EVM analyst is vital, since this position would be responsible for reporting on the schedule, cost, and performance of the project. We believe that these two vacancies should be a staffing priority for the Sentinel PMO.

In addition, at the time of our last audit in 2008, the Sentinel PMO reported two vacant positions, an Intelligence Support Specialist and a Supervisory Special Agent. The Sentinel PMO has not filled either of these positions. FBI officials told us these vacancies have not been filled because of the FBI's focus on pursuing terrorism, intelligence, and criminal investigations, as well as competing for temporary staff from other divisions within the FBI. To mitigate the impact of these vacancies on Sentinel operations, Sentinel PMO officials said they were soliciting input from field office staff on Sentinel.

Since our last audit, the Sentinel PMO has experienced an increase in personnel turnover. The Sentinel PMO lost staff in key positions, including Deputy Program Manager, Contracting Officer's Technical Representative, Program Support Unit Chief, and Quality Manager. While the Program Support Unit Chief and the Contracting Officer's Technical Representative positions were filled by existing Sentinel PMO staff, the replacement staff's previous positions were left vacant.

In light of the FBI's aggressive development and deployment schedule for Sentinel, we are concerned that increased staff turnover may negatively affect the Sentinel PMO's ability to properly oversee the project. The Trilogy project, which had 15 different key IT managers over the course of its 3.5-year life, offers lessons on the importance of maintaining consistent project oversight. Because an adequately staffed Sentinel PMO is vital to Sentinel's success, we believe the FBI should focus on ensuring the Sentinel PMO is fully staffed. (For a more complete description of Sentinel PMO staff and their duties, see Appendix V.)

Conclusion

In two of our previous Sentinel reports, we commented on Sentinel's aggressive schedule and the risk that the completion of Phase 4 could be delayed. Because the FBI revised the schedule for Phases 3 and 4 after our audit work was completed, we did not have an opportunity to analyze the rationale for the revised schedule. However, based on our understanding of the project, we believe that the revised schedule is more realistic and that extending the schedule increases the likelihood that Sentinel will satisfy users' requirements when it is completed. In June 2009, Lockheed Martin submitted an engineering change proposal that included detailed cost and schedule estimates for Phases 3 and 4. As a result, Phase 4, the project's final phase, is scheduled to be completed on September 20, 2010, 3 months later than we previously reported and 9 months later than originally planned in June 2006. In addition, the completion date for Phase 2 was re-scheduled to October 16, 2009, 3 months later than stated in our previous report.

We believe that the Sentinel PMO needs a fully staffed, highly skilled, and integrated staff to successfully oversee Sentinel's development. We found that the current PMO Staffing Plan did not capture the current staffing needs of the project, including the staffing and skill levels needed to ensure that Sentinel is completed successfully. We are also concerned that the vacancy rate at the PMO has more than doubled since our last report.

Recommendations

We recommend that the FBI:

1. Update the Sentinel Staffing Plan to ensure that all of the needs of the Sentinel PMO are covered by positions within the plan.
2. Expeditiously fill the vacant positions within the updated Sentinel PMO Staffing Plan to ensure that the staffing needs of the project are being met.

FINDING 2: PHASE 2 STATUS

We found that the expected cost, schedule, and scope of Phase 2 have increased since our last audit. Sentinel's Phase 2 has 4 segments, the first 3 of which have been completed. The FBI accepted delivery of Phase 2, Segment 3 of Sentinel in June 2009. This segment delivered: (1) interfaces to six FBI IT systems, (2) enhanced system administration, (3) portions of Sentinel's records management capability, (4) a user-friendly method of sending and receiving tasks, and (5) the ability to extract administrative case data from ACS. However, the FBI did not deploy eight electronic forms and their corresponding automated workflows because the FBI's new access control tool did not function as intended.

We concluded that development of electronic forms and automated workflows that meet user expectations continues to be a challenge in Segment 4 for the Sentinel PMO. On June 17, 2009, after spending \$810,000 to develop the electronic forms, the Sentinel PMO requested approval from the Department's Chief Information Officer to rebaseline Segment 4 and incorporate a new approach to develop electronic forms and their associated automated workflows.²⁹ Phase 2, Segment 4 is now expected to be completed on October 16, 2009, and the segment is scheduled to still include all of the significant capabilities originally planned as well as three new user-friendly forms. However, some of the deliverables originally scheduled for Phase 2 have been deferred to later phases of the project.

²⁹ Rebaselining, an earned value management term, revises a project's planned baselines and eliminates all cost and schedule variances. Rebaselining usually occurs when a project's progress deviates significantly from the original plan and the remaining time and funds are not sufficient to complete the project.

Phase 2 Overview

Phase 2, which is divided into four segments, was intended to deliver eight electronic forms, implement more efficient work processes, and begin the migration of administrative case data currently in ACS to Sentinel.³⁰ As discussed in greater detail throughout this finding, the FBI revised its expectations for Phase 2. Table 4 shows the major user capabilities each segment delivered or will deliver.

Table 4: PHASE 2 USER CAPABILITIES BY SEGMENT

Segment	User Capabilities	Status
1	<ul style="list-style-type: none"> [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] 	COMPLETED
2	<ul style="list-style-type: none"> [REDACTED] [REDACTED] 	COMPLETED
3	<ul style="list-style-type: none"> [REDACTED] [REDACTED] [REDACTED] 	COMPLETED
4	<ul style="list-style-type: none"> [REDACTED] [REDACTED] [REDACTED] 	In Progress (as of September 2009)

Source: FBI

Phase 2 Status

The expected cost, schedule, and scope of Phase 2 have increased since our last audit. The FBI expects that Phase 2 will be delayed at least 3 months and cost an additional \$14 million to develop. We identified three

³⁰ Electronic forms are the Sentinel screens that agents, analysts, and staff will use to input case information. This information will then be loaded into and maintained by Sentinel.

major factors that contributed to the schedule delay and cost increase. First, during Segments 2 and 3, Lockheed Martin and the Sentinel PMO encountered problems developing Sentinel's electronic forms, such as the intake and import forms, and their supporting automated workflows. (See Appendix III for a list and description of Sentinel's electronic forms.)

Second, the successful development of Sentinel is dependent on the Enterprise Directory Services (EDS) access control tool, which did not perform as intended and did not deliver the planned security requirements for Phase 2.³¹

Third, the FBI reallocated requirements from Phases 3 and 4 to Phase 2, Segment 4.

In addition to the changes in the cost, schedule, and scope of Phase 2, we are concerned that the lack of progress the FBI has made in planning for the migration of administrative case data from ACS to Sentinel will delay the completion of Phase 2, Segment 4 and potentially increase Sentinel's overall cost.

Segment 2

Segment 2 included five increments, Increments 5 and 7 through 10.³² When the FBI deployed Segment 2 in August 2008, it was within budget and only 2.5 weeks behind schedule, but the segment did not deliver substantial portions of its planned capabilities. A discussion of each of the segment's increments follows.

Increment 5

The objective of Increment 5 was to develop electronic import and intake forms as well as the initial automated workflow capability to

³¹ EDS is part of a portfolio of security services entitled the Identity Access Management (IAM) Initiative that the FBI plans to implement. IAM will identify individuals within a system and control their access to information within that system through an established identity that will grant a user access to specific resources based on company policies and the permission level assigned to the user.

³² The Sentinel PMO deferred Increment 6 to Phase 4. See page 20 for a more detailed discussion.

electronically forward the forms to the appropriate approving official.³³ Lockheed Martin developed the import and intake forms as scheduled. However, while the forms met the technical requirements of the project, they did not meet FBI users' needs. For example, the paper versions of these forms are one or two pages in length. In Sentinel, the intake form was as long as seven pages. In addition, the forms were not intuitive in that an entry in one field did not automatically direct the cursor to the next logical field. Instead, users had to scroll through the entire form manually.

We believe that the Sentinel PMO should have obtained user input earlier in the forms development process. According to the Sentinel Program Manager, users who reviewed the Segment 2 forms said the forms met only about 80 percent of their needs. In addition, the Independent Verification and Validation (IV&V) contractor and the Sentinel PMO official responsible for testing products delivered to the Sentinel PMO said that their inability to view products early in the development process prevented them from providing the Sentinel PMO with valuable feedback. The Sentinel PMO's decision to not involve users, the IV&V contractor, and the Sentinel PMO testing official earlier in the forms development process caused unnecessary revision of the forms, which increased the cost and delayed the schedule.

Because of user concerns about the forms, the Sentinel Program Manager did not deploy the forms as part of Segment 2. The deployment of the intake and import forms was deferred to Segment 3, Increment 12, which already included requirements to develop five other forms.

Increment 6

Increment 6 was originally intended to develop and deploy a Sentinel intrusion detection system. This system would assist security personnel in preventing intrusion attempts, notify security personnel of an intrusion, and capture related alerts in audit logs. The Sentinel PMO deferred this increment and \$823,692 in associated costs to Phase 4 to determine if the requirements for a host intrusion detection system are redundant with other intrusion detection capabilities implemented in Phase 1 of Sentinel or provided by other FBI systems. However, according to the Sentinel Program Manager, the elimination of Increment 6 did not impact the Segment 2 schedule because the increment had not been fully planned, so Lockheed Martin did not know how long it would take to accomplish.

³³ The import form is used to transport non-Sentinel documents into Sentinel. The intake form is used to document each complaint received by the FBI and the FBI's assessment of the action necessary to respond to the complaint.

Increment 7

Increment 7 contained activities necessary to prepare for the migration of administrative case data from ACS to Sentinel. During this increment, Lockheed Martin installed new hardware that will allow it to work with actual case data and restricted data during a future increment. Lockheed Martin also tested the quality of the data to be migrated in ACS and provided error assessment reports to the FBI for the administrative cases.

Increment 8

Increment 8 deployed a new hardware architecture to improve system availability and performance.

Increment 9

Increment 9 updated the Sentinel Enterprise Portal (SEP), which was originally deployed in Phase 2, Segment 1. The improvements included a Squad Members Table, enhanced personal customization, and a web-based version of the calendar contained in the FBI's enterprise e-mail system. The Squad Members Table allows supervisors to see a list of everyone assigned to a squad and the cases and leads to which they are assigned. The enhanced personal customization allows users to customize the portal to suit their personal preferences, such as the order of information displayed in portlets. The portlet displaying a user's calendar was not originally planned for this increment, but the Sentinel PMO added it after receiving numerous requests for this capability from users.

Increment 10

Increment 10 improved Sentinel's security auditing capability. This capability allowed the system to maintain an audit trail of user activity.

Segment 3

Segment 3 consisted of seven increments, Increments 11 through 14, 16, 18, and 19.³⁴ The FBI accepted delivery of Segment 3 from Lockheed Martin in April 2009 but did not deploy all of the increments contained in the segment. When the FBI accepted delivery of Segment 3, the segment did not deliver substantial portions of its planned capabilities. The Sentinel Program Manager said Segment 3 was critical to Sentinel's overall schedule because this segment included the integration of Sentinel with two other FBI IT systems.

Increment 11

Increment 11 was designed to provide Sentinel with the early stages of its own access controls, which would manage users' access to specific system and network resources based on the level of authority assigned to them. Prior to this increment, Sentinel relied on ACS's access controls to determine a user's access to data and authority to perform functions within Sentinel.

Enterprise Directory Services

EDS was deployed in January 2009 to provide a uniform source of data to FBI IT systems, including Sentinel, to limit access to information to those users who have the appropriate permissions, and to ensure users exercise only their permitted roles in the automated workflows. Sentinel was the first FBI IT system to utilize EDS.

Lockheed Martin successfully integrated EDS with Sentinel but, as discussed in Increment 12, the FBI was unable to rely on EDS because of discrepancies between EDS's authoritative data sources and ACS data. Therefore, Sentinel will continue to rely on ACS for access controls until Phase 2 is completed.

³⁴ Increments 15 and 17 were combined into Increments 12 and 18, respectively.

Public Key Infrastructure & Web Reduced Sign-on

Sentinel's integration with PKI will enhance Sentinel's security, allow users to digitally sign documents, and when combined with Web Reduced Sign-on, eliminate the requirement for users to separately sign-on to the systems available through the Sentinel Enterprise Portal.³⁵ As of April 2009, PKI had approximately [REDACTED] FBI users. Sentinel PMO personnel have expressed concern about whether the PKI system can handle the demands an additional [REDACTED] to [REDACTED] Sentinel users will place on the infrastructure when PKI is deployed in Sentinel. Specifically, Sentinel PMO personnel are concerned with the PKI system's capacity to provide quick responses to the planned [REDACTED] to [REDACTED] Sentinel users because the PKI system is running on outdated hardware. Sentinel users may experience longer PKI response time as an increase in Sentinel response time. However, the PKI Program Manager said she believes the PKI system can handle the increased workload and provide Sentinel users with quick responses.

In addition to concerns about the impact of increased users on the PKI system, the Sentinel IV&V contractor identified three issues related to the Security Access Control System (SACS) cards the FBI currently uses as part of its PKI initiative: (1) not all potential Sentinel users have received SACS cards, (2) previous cards have failed, and (3) the cards may need to be re-issued to some users. The FBI's PKI system also contains outdated information so many employees will need to have their accounts updated.

To address these issues, users will be allowed to log-on to Sentinel using either PKI authentication or username and password authentication during a transition period. However, according to the Sentinel Program Manager, the use of a SACS card will be mandatory for all Sentinel users after Phase 2 is completed. The FBI is considering instituting a 30 to 90 day grace period to allow all users to re-activate or obtain necessary PKI accounts, cards, and equipment. The FBI's Information Technology Operations Division (ITOD) will be responsible for resolving PKI user issues, so close coordination between the Sentinel PMO and ITOD will be necessary. The Sentinel PMO should continue to monitor the status of these PKI issues to ensure that Sentinel can rely on PKI by the time Phase 2 is completed.

Increment 12

Increment 12 was a key component of Segment 3 because it was intended to deliver the most capability to the average Sentinel user. Under

³⁵ The Public Key Infrastructure uses smartcards and encryption to enhance network security.

this increment, Lockheed Martin was required to develop five forms for operational use: [REDACTED]

[REDACTED]. In addition, Lockheed Martin was supposed to deliver the [REDACTED] forms, the completion of which the FBI originally deferred from Segment 2 to Segment 3. Increment 12 was also supposed to deliver the following capabilities:

[REDACTED]

[REDACTED]

[REDACTED]

According to the Sentinel PMO, in March 2009 the FBI eliminated the requirement for off-line authoring because users preferred on-line authoring and Lockheed Martin encountered several technical problems with the off-line authoring, including the forms taking about 90 seconds to load. The Sentinel Program Manager said that the off-line authoring requirement was one of several requirements the FBI changed because the FBI's needs had changed in the 5 years since the requirements initially were written. According to the Sentinel Program Manager, Lockheed Martin delivered all of the remaining capabilities required by Increment 12, thus completing Segment 3. However, the FBI decided not to deploy Increment 12 because of the increment's interdependency with EDS and the directives established in the new Attorney General Guidelines that affect Sentinel forms but were not included in the original Sentinel System Requirements Specifications.

Enterprise Directory Services

The forms developed in Increment 12 rely on an automated workflow, which was designed to forward the forms to the appropriate approving official based on access privileges and user roles identified in the authoritative data sources. The automated workflow capability is dependent on the accuracy of the authoritative data sources. As previously discussed, EDS assimilates information such as a user's position, from four authoritative data sources into a single view to ensure that the data has a common and consistent format. However, the FBI was unable to rely on the data in EDS because of discrepancies between authoritative data sources.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Segment 4

[REDACTED]

As previously discussed, the Sentinel PMO encountered challenges with the development of electronic forms during Segments 2 and 3. On June 17, 2009, after spending \$810,000 developing forms using a forms software package, the Sentinel PMO requested approval from the Department's Chief Information Officer to rebaseline Segment 4 to incorporate a new approach that would use a web-based solution to develop the electronic forms and automated workflows for Sentinel. In its request, the Sentinel PMO stated that the new approach was necessary because the forms developed in Segments 2 and 3 received unfavorable user feedback and that the user interface was very complex.

Under the new plan, Segment 4 will integrate concepts from the FBI-developed prototype of the web-based user interface to enhance the

³⁶ Segment 4's completion date, which had been moved to October 16, 2009, did not change under this new plan and the segment will still include the capabilities required to transfer all of the administrative case files from ACS to Sentinel. The migration of administrative case files consists of (1) searching ACS for administrative case files, (2) copying all administrative case files from ACS to Sentinel's records management software, and (3) checking the new files for errors. Sentinel PMO officials said they expect to gain experience from this migration of administrative case files. However, we are concerned that the Sentinel PMO lacks a detailed data migration plan and that without such a detailed plan the Sentinel PMO cannot ensure that it has adequate resources or time allocated to successfully migrate administrative and investigative case file data from ACS.

The Sentinel PMO anticipates the redirected Segment 4 will provide users with the following benefits:

- a more intuitive user interface that will provide immediate access to relevant information based on the user's job role and preferences,
- the ability to create documents directly in Sentinel without uploading, which will streamline serialization and allow users to attach electronic files containing supporting documentation,
- on-line help that is based on the function the user is performing, and
- improved response time.

To accomplish its new plan and maintain the current segment completion date, the Sentinel PMO deferred the development of approximately \$2.1 million of capabilities to Phase 3 of Sentinel. To maintain its current overall budget, the Sentinel PMO will use approximately \$2.9 million of its risk management reserve to pay for the expanded scope of Segment 4. The Sentinel PMO also reduced Lockheed Martin's Sentinel training budget by \$800,000 to help offset the cost of the new plan. However, the Sentinel PMO expects that the new user interface and forms development process will reduce the cost of Phases 3 and 4 by \$4 million.

Conclusion

The Sentinel PMO has made significant progress towards developing Sentinel's infrastructure. One of the underlying concepts of Sentinel's incremental approach is to deliver new capabilities to users about every 6 months. However, during Segments 2 and 3 of Phase 2, the Sentinel PMO encountered challenges in deploying forms that met users' needs and incorporated automated workflows. As a result, average Sentinel users have not received any significant enhancements to Sentinel from these segments.

The authoritative data sources issues encountered in EDS remain a risk because Sentinel's automated workflows depend on reliable EDS data. If EDS cannot provide Sentinel with reliable data by the end of Phase 2, the deployment of Phase 2, Segment 4 will be delayed and Sentinel will have to continue to rely on ACS, the system Sentinel should be replacing, as its authoritative source.

Data migration is one of the major milestones that will affect the ultimate success of Sentinel, as the data migration will make Sentinel the primary repository of case file information. The Sentinel PMO should gain valuable experience from the administrative case file migration to be completed in Segment 4. While the Sentinel PMO has a conceptual plan to complete the migration, a detailed Data Migration Plan still needs to be created. Problems that occur during the migration of the administrative case files could inform potential problems for the migration of data from investigative case files.

It is too early to know whether the Sentinel PMO's new approach to developing forms will be successful, but it is clear that the Sentinel PMO used Sentinel's incremental approach to its advantage. When Sentinel PMO officials realized that Lockheed Martin's original approach to forms would not meet user needs, the Sentinel PMO revised its methodology. Such corrections are more difficult and costly to make in the traditional software

development model. User involvement in form development is vital to the success of a project, regardless of the development approach chosen.

Recommendations

We recommend that the FBI:

3. Incorporate more user involvement throughout the remainder of Sentinel development.
4. Develop a detailed Data Migration Plan for the migration of data from FBI case files.

FINDING 3: PHASE 2 USER ACCEPTANCE AND SYSTEM PERFORMANCE

Sentinel will represent a significant shift in the way the FBI documents investigations and case analysis by providing an electronic database for cases rather than the current paper-based system. During meetings in which the Sentinel PMO solicited feedback on Sentinel's current functionality, the most frequent complaint regarding Sentinel was that it responds too slowly to user requests. These slow response times can be tied directly to Sentinel's dependence on the FBI's outdated network used to send and receive data. The feedback also demonstrates that Sentinel users do not differentiate between the FBI's network performance and Sentinel's performance. While not directly a part of the Sentinel project, the FBI is currently spending \$39 million to improve and simplify its network architecture. We believe this upgrade is vital to improving use of Sentinel.

In addition, the Sentinel Measurement Plan requires Lockheed Martin to submit an evaluation of Sentinel metrics, which helps measure the program's development, in a monthly Measurement and Defect Report. We found several instances where the reports submitted by Lockheed Martin were either not provided or included outdated information. If the FBI does not have accurate data, it cannot adequately monitor Sentinel's performance or assess progress toward meeting the FBI's requirements for the completed version of Sentinel.

Phase 2 User Acceptance

Since the deployment of Phase 1, the FBI has collected data on the number of Sentinel users. To further understand the user data, a team of FBI and Lockheed Martin personnel conducted interviews at FBI field offices.

Sentinel User Statistics

From February 2008 to December 2008, the numbers of Sentinel and ACS users were generally constant, with the exception of a significant increase in Sentinel users during April 2008. The Sentinel Deputy Program Manager for Organizational Change Management said that the FBI deployed the Sentinel Enterprise Portal (SEP) in early April 2008, and the temporary

increase in Sentinel usage was probably due to users trying to access the new portal.

Field Office Visits

A joint Sentinel PMO and Lockheed Martin team visited 10 FBI field offices from December 2008 through January 2009. The purpose of these visits was to meet with field office personnel and discuss their views on Sentinel functionality and improvements made in recent releases of Sentinel.

During the visits, the team also solicited user feedback on Sentinel's current functionality. Users most frequently identified the following two issues:

- Sentinel takes too long to respond to user queries for information. The FBI has to expand or improve its network so that all of the applications delivered to users work as designed.
- Sentinel training for new employees is not adequate because the Sentinel training given at the FBI Academy is not detailed enough and occurs weeks before new employees use Sentinel at their new assignments.

FBI Network

Sentinel PMO officials stated that the number one user complaint over the last 2 years has been that Sentinel responds too slowly to user requests. The slow response times are primarily caused by the FBI's aging network architecture and inadequate bandwidth.³⁷

A Sentinel PMO official stated that the FBI's planned updates to the network architecture should improve Sentinel response time. To decrease the number of communications processed by the network, the FBI plans to simplify its network architecture by reducing the number of network components that have to communicate with each other. The FBI also plans to install network accelerators, which should increase the speed at which requests travel through the network.

We believe that if the FBI's current network architecture is not upgraded, users will continue to attribute Sentinel's slow response time to

³⁷ Bandwidth is the amount of data that can be carried from one point to another in a given time period.

Sentinel's design rather than to deficiencies in the FBI's overall network infrastructure. For example, we learned that the Sentinel PMO and Lockheed Martin team demonstrated how to access the Sentinel Enterprise Portal and use Sentinel during their visit to the Jacksonville Field Office. However, in response to routine queries, it took approximately 2 minutes for individual pages to load and display on the screen. While the slow response was due the network's inability to accommodate the increased bandwidth required by Sentinel, the 57 employees attending the demonstration attributed the delay to Sentinel, not the FBI's information technology network.

The last FBI network upgrade was completed in 2003 as part of the Trilogy project. The FBI plans to begin deploying its new network, the Next Generation Network, in September 2009 and is scheduled to fully implement the network by December 31, 2009. The FBI said the Next Generation Network upgrade will cost \$39 million for hardware and software. While this upgrade will have a positive impact on all of the FBI's operations that rely on the network, the network upgrade is also essential for the success of Sentinel.

Sentinel Training

The FBI provides Sentinel training through the FBI's Virtual Academy, the FBI's online training program. Through the Virtual Academy, Sentinel provides slide shows and other instructional materials. Sentinel's Communications and Training Unit personnel recognize the need for additional training and support to supplement the online training for Sentinel forms and automated workflows. However, this supplemental training has not been developed because the Sentinel forms and automated workflows have not been fully developed.

The Sentinel PMO is also piloting a "virtual classroom" for future training to address the limitations of Sentinel's online training. The virtual classroom will provide live video, audio, data, and graphics online to Sentinel users. Because of Sentinel's incremental development approach, significant new functionality will be delivered to users at different points before Sentinel is fully developed. Sentinel PMO officials said that delivering training via a virtual classroom will allow the FBI to address its most significant training challenges, providing timely training to many FBI personnel as that functionality is added to Sentinel. FBI officials told us that when the FBI tested this approach with a user group made up of FBI personnel from across the country, it was well received.

In addition, the Sentinel PMO has enhanced Sentinel's online help capabilities and created additional Sentinel job aids to supplement the online

training. In addition, Lockheed Martin plans to develop “fly overs” that will flash information on the screen that explains how to perform tasks in Sentinel when a user moves the mouse over different links or options displayed on the screen. Lockheed Martin and the Sentinel PMO also plan to conduct workshops for Sentinel Coordinators and Training Advisors in each of the FBI’s 56 field offices. The Sentinel PMO believes this additional training should enhance the coordinators’ and training advisors’ ability to provide on-site support to Sentinel users.

Operations and Maintenance Activities

After the FBI accepted delivery of Phase 1 from Lockheed Martin, Sentinel entered the Operations and Maintenance (O&M) phase of the project’s IT life cycle.³⁸ So far, the activities performed during Sentinel’s Phase 2 O&M phase have addressed low priority system deficiencies, user requests for improvements, and system maintenance. While the Sentinel PMO provides oversight, Lockheed Martin is responsible for most of the technical work in the O&M phase, including system maintenance, resolution of issues identified by Sentinel users, and the ongoing detection of system abnormalities.

Phase 2 Updates

To address technical issues and user concerns identified during Phase 2, the FBI has periodically deployed updated versions of Sentinel, called releases.³⁹ From April 2008 through January 2009, the FBI deployed 23 releases.

The Sentinel Joint Engineering Board – a governance board comprised of both FBI and Lockheed Martin personnel – manages changes to Sentinel and decides which defect reports, technical problems, and functionality updates each release will address. To aid in the decision making process, the Joint Engineering Board assigns one of four priority rankings to Defect Reports, with Priority 1 being the most important.

Six of the 77 Defect Reports (8 percent) in the 23 Releases we reviewed received a Priority 1 or Priority 2 rating. Priority 1 Defect Reports require immediate attention, while Priority 2 Defect Reports require an

³⁸ The purpose of the O&M phase is (1) to maintain and support the products, including recertification every three years for proper electronic recordkeeping and (2) to manage and implement necessary modifications.

³⁹ In our previous report, we referred to Releases as Builds. Functionally, they are the same.

immediate workaround and a solution soon thereafter. Of the remaining 71 Defect Reports, 36 were Priority 3 and 35 were Priority 4.

The Sentinel PMO tracked the functional area of each Defect Report addressed in Phase 2 O&M releases. The Software Development and User Interface functional areas represented 68 percent of the Defect Reports addressed in the releases we reviewed. In our judgment, this percentage of Software Development Defect Reports is normal for a project of Sentinel's size involving the integration of COTS products. We believe the generation of the User Interface Defect Reports was a result of the difficulty Lockheed Martin encountered, based on feedback it received from FBI employee user groups, in building user-friendly forms and the Sentinel interface.

Phase 2 System Performance Metrics

The FBI established performance measures in the Sentinel Measurement Plan (Measurement Plan) to ensure that Sentinel meets the contractual requirements of the program and that deliverables meet functional requirements. The Measurement Plan defined the performance data to be collected, including seven Critical Performance Measures (CPM) and five O&M data elements.⁴⁰ The seven CPM data elements required by the Measurement Plan address the technical aspects of Sentinel's performance, such as the percentage of time the system is available to FBI users.

The Measurement Plan also requires Lockheed Martin to evaluate how it is meeting the established metrics and submit a monthly Measurement and Defect Report. Lockheed Martin distributes this report to the Sentinel PMO and other FBI offices overseeing Sentinel's performance. From March 2008 through February 2009 Lockheed Martin submitted only 10 of the required 12 Measurement and Defect Reports. A Sentinel PMO official stated that Lockheed Martin did not submit Measurement and Defect Reports for October 2008 and November 2008 because the FBI and Lockheed Martin were negotiating revisions to the Measurement Plan at that time. In addition, we noted that the December 2008 and January 2009 reports included data outside the relevant reporting period. For example, the January 2009 report was based on data from August 2008. In our judgment, the Measurement and Defect Reports are only useful if they are based on relevant and timely data. Otherwise, the reports may present an inaccurate view of Sentinel's recent performance.

⁴⁰ CPM data elements are used to track system performance during development to gauge whether the specific program elements will be met once the system has been deployed. O&M data elements track system performance after the system has been deployed.

Based on the CPM and O&M metrics included in the 10 Measurement and Defect Reports Lockheed Martin submitted, Sentinel met its critical performance threshold for system response time, as the requirements for Sentinel only require Lockheed Martin to meet a requirement for the time it takes for the system to receive and answer a request. However, this requirement is only one of the factors that affect the speed in which a user receives requested data from Sentinel. The other two factors include: (1) the time it takes the network to send and receive data, and (2) the amount of data that needs to be transferred. Because the requirement only relates to Sentinel's response time, the Sentinel Measurement and Defect reports only measure that factor. Consequently, the reports do not include the time it takes the network to send or receive data or measure the amount of data being transferred, and therefore do not accurately reflect users' experiences.

A Sentinel PMO official stated that the Sentinel PMO's plan for web-based forms will use much smaller files than the forms software used during Phase 2, Segments 1 through 3. In turn, the smaller files will significantly reduce the amount of data transferred across the network. While the project to improve the FBI's network is a separate and distinct project from Sentinel, we believe there is a direct relationship between network response times and a user's perception of Sentinel.

Conclusion

Users have repeatedly expressed concern that Sentinel does not respond quickly enough to data requests, and these concerns are directly related to the capabilities of the FBI's information technology network, which most users do not differentiate from Sentinel. For users to fully utilize Sentinel and its new automated workflows, we believe it is critical that the FBI implement its Next Generation Network by December 31, 2009, as scheduled. We also believe that the FBI should establish a goal for Sentinel's overall response time and include the network response time in order to eliminate the current negative user perceptions created by the FBI's current network.

While the FBI is taking steps to enhance Sentinel training for users, providing training to FBI personnel as functionality is added to Sentinel presents a significant and ongoing challenge. We will continue to review user training as the Sentinel moves toward its full operational capability.

The Sentinel PMO tracked the functional area of each Defect Report addressed by the updates to Phase 2. Over half of these Defect Reports

addressed issues with the Software Development and User Interface. In our judgment, this reflects the difficulty Lockheed Martin encountered in building user-friendly forms as well as an intuitive Sentinel interface. As discussed in the previous finding, the FBI has developed a new approach to developing forms that meet users' needs, and we will continue to monitor this issue in future reports.

We also reviewed monthly Sentinel Measurement and Defect Reports to determine whether Sentinel's performance has met technical expectations. We are concerned that Lockheed Martin did not always submit the required monthly reports or use relevant data in these reports. The FBI needs accurate data to adequately monitor Sentinel performance and assess Sentinel's progress toward meeting the FBI's requirements for the completed version of Sentinel.

Recommendations

We recommend that the FBI:

5. Ensure that Lockheed Martin measures and reports Sentinel system performance in accordance with the timeframes identified in the Sentinel Measurement Plan.
6. Develop a goal for Sentinel response time that includes the network on which Sentinel data travels.

FINDING 4: ACTIONS TAKEN ON PREVIOUS OIG RECOMMENDATIONS

The FBI has generally taken steps to address our concerns regarding the management of Sentinel and to address the recommendations we made in previous Sentinel reports. Based on the FBI's actions, we have closed 30 of the 31 recommendations. The FBI agreed with the remaining recommendation but has not yet fully implemented steps to remedy it.

In our previous four Sentinel reports, we made a total of 31 recommendations, and the actions taken by the FBI in response to our recommendations have allowed us to close all but one.

For example, we recommended that the FBI develop an architecture representing Sentinel's design when it was completely operational (such an architecture is often referred to as a target architecture because the design of intermediate components are aimed at meeting full operating capability architecture). The FBI completed the Sentinel full operating capability architecture and the Department's Chief Information Officer approved it.

We also recommended that the FBI decide what data will be stored in Sentinel, how that data will be collected, and what forms Sentinel will replace. The FBI revised the appropriate Sentinel planning documents to identify the forms that Sentinel will develop, the data that will be collected by those forms, and the data that will be stored in Sentinel, including the data that will be migrated from legacy systems.

With regard to one of our recommendations in our December 2008 report, we stated that the FBI should decide whether Sentinel will serve as the FBI's enterprise-wide records management system. In response, the FBI decided that Sentinel would not be the enterprise-wide records management system. However, the FBI is considering using the COTS records management software selected by the Sentinel project as its enterprise-wide records management software. We do not disagree with that decision, because implementing a new records management system would be a large and challenging project, and using Sentinel as the FBI's enterprise-wide records management application would have delayed Sentinel's completion and added to its cost.

Appendix IV contains a list of all the closed recommendations from our previous four Sentinel reports.

The one recommendation that remains open is from our December 2008 audit report:

Update the Plans of Actions and Milestones (POA&M) template and all open POA&M findings on the HS3 and SP1 POA&Ms to include all of the reporting elements required by the Office of Management and Budget (OMB).

A POA&M is a management tool for correcting security weaknesses identified in an IT system. A POA&M details the resources required to accomplish the elements of the plan, any milestones in meeting the task, and scheduled completion dates for the milestones. To ensure that POA&Ms contain the data necessary to assist agencies in identifying, assessing, prioritizing, and monitoring the progress of corrective actions, OMB issued guidance listing eight elements a POA&M should include for OMB-required reports.

We recommended that the FBI update its POA&M template and the Sentinel POA&Ms to include all information required by OMB. Since December 2008, the FBI has provided two updated POA&Ms for Sentinel. However, in our review of the Sentinel Phase 2 POA&M document dated April 2009, we found that the FBI did not include the two missing OMB reporting elements we identified during our audit: (1) Key Milestones with Completion Dates and (2) Source of the Weakness. In addition, we were unable to determine from the printout provided by the FBI whether the HS3 POA&M contains the four OMB reporting elements identified in our recommendation as missing. Therefore, we will close the recommendation when the FBI clearly demonstrates that the Sentinel POA&Ms include all of the reporting elements required by OMB.

Conclusion

Based on actions taken by the FBI, we have closed 30 of the 31 recommendations we made during our first four audits of Sentinel. While the FBI has agreed with the remaining recommendation, it has not taken the actions necessary to close it. This recommendation can be closed when we receive documentation clearly demonstrating that the Sentinel POA&Ms include all of the reporting elements required by OMB.

STATEMENT ON INTERNAL CONTROLS

In planning and performing our audit of the FBI's contract for the Sentinel project, we considered the FBI's internal controls for the purpose of determining our audit procedures. This evaluation was not made for the purpose of providing assurance on the internal control structure as a whole. However, we noted certain matters that we consider to be reportable conditions under the *Government Auditing Standards*.

Reportable conditions involve matters coming to our attention relating to significant deficiencies in the design or operation of the internal control structure that, in our judgment, could adversely affect the FBI's ability to manage the Sentinel project. As discussed in the Findings and Recommendations section of this report, we found the following internal control deficiencies.

- The Migration Plan has not been developed.
- The Sentinel system performance needs to be in accordance with the timeframe identified in the Sentinel Measurement Plan.
- The Sentinel PMO staffing plan needs to be updated.

Because we are not expressing an opinion on the FBI's internal control structure as a whole, this statement is intended solely for the information and use of the FBI in contracting for the Sentinel project. This restriction is not intended to limit the distribution of this report, which is a matter of public record.

STATEMENT ON COMPLIANCE WITH LAWS AND REGULATIONS

This audit assessed the FBI's implementation of the contract for its Sentinel case management project. In connection with the audit, as required by the *Government Auditing Standards*, we reviewed management processes and records to obtain reasonable assurance that the FBI's compliance with laws and regulations that, if not complied with, in our judgment, could have a material effect on FBI operations. Compliance with laws and regulations applicable to the FBI's management of the Sentinel project is the responsibility of the FBI's management.

Our audit included examining, on a test basis, evidence about laws and regulations. The specific laws and regulations against which we conducted our tests are contained in the relevant portions of:

- Attorney General Guidelines for Domestic FBI Operations, September 29, 2008;
- OMB Circular A-11, Memorandum M-02-01, and Memorandum M-05-23;
- Executive Order 13388: Further Strengthening the Sharing of Terrorism Information to Protect Americans, dated October 25, 2005;
- Department of Justice Order 2880.1b;
- American National Standards Institute/Electronic Industries Alliance Standard 748A: Earned Value Management Systems; and
- National Defense Industrial Association Earned Value Management System Intent Guide.

Our audit did not identify any areas where the FBI was not in compliance with the laws and regulations referred to above. With respect to transactions that were not tested, nothing came to our attention that caused us to believe that FBI management was not in compliance with the laws and regulations cited above.

OBJECTIVES, SCOPE, AND METHODOLOGY

Objectives

The objectives of this audit were to: (1) evaluate the FBI's implementation of Phase 2 of the Sentinel project, including project's cost, schedule, and performance; and (2) assess the FBI's progress in resolving concerns identified in the OIG's previous Sentinel audits.

Scope and Methodology

The audit was performed in accordance with the *Government Auditing Standards*, and included tests and procedures necessary to accomplish the audit objectives. We conducted work at the Department of Justice's and FBI's headquarters in Washington, D.C., and at the FBI Sentinel Program Management Office (PMO) in McLean, Virginia.

To perform our audit, we interviewed officials from the FBI and the Department of Justice. We also interviewed officials from contractors supporting the Sentinel PMO. We reviewed documents related to the Sentinel contract; cost and budget documentation; Sentinel plans, processes, and guidelines; prior OIG Sentinel reports; and other reports from the OIG and other organizations on the FBI's information technology. We obtained from the FBI and used in our report computer-processed data related to the requirements distribution by phase and the number of unique Sentinel and ACS users. We used the data for informational purposes. Therefore, we did not verify its accuracy.

To evaluate the FBI's implementation of the Sentinel contract, we examined the contract as well as associated amendments, modifications, and other supporting documentation. We also examined actual costs and progress toward completion of Phase 2. Additionally, we interviewed FBI officials responsible for contract implementation.

To update issues identified in the OIG's December 2008 Sentinel audit report, we interviewed responsible FBI and contractor officials and reviewed plans and procedures for cost tracking, risk management, contingency planning, independent verification and validation, Sentinel PMO staffing. We also reviewed Phase 2 schedule, cost, performance, and management. We also interviewed FBI officials and obtained the updated status on issues relating to EVM.

ACRONYMS

ACS	Automated Case Support
BMT	Business Management Team
BPR	Business Process Reengineering
BPMS	Bureau Personnel Management System
COTS	Commercial Off-The-Shelf
CPM	Critical Performance Measures
EC	Electronic Communication
EDS	Enterprise Directory Services
EVM	Earned Value Management
FBI	Federal Bureau of Investigation
FD	Field Document
FOC	Full Operating Capability
GAO	U.S. Government Accountability Office
IAM	Identity Access Management
IT	Information Technology
ITIM	Information Technology Investment Management
ITOD	Information Technology Operations Division
IV&V	Independent Verification and Validation
LCMD	Life Cycle Management Directive
O&M	Operations and Maintenance
OCM	Organizational Change Management
OIG	Office of the Inspector General
OMB	Office of Management and Budget
PIT	Program Integration Team
PKI	Public Key Infrastructure
PMO	Program Management Office
POA&M	Plans of Action and Milestones
RIA	Report of Investigative Activity
RMD	Records Management Division
SACS	Security Access Control System
SDU	Systems Development Unit
SEP	Sentinel Enterprise Portal

SENTINEL ELECTRONIC FORM DETAIL

[REDACTED]

[REDACTED]

[REDACTED]

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CLOSED RECOMMENDATIONS FROM PRIOR OIG REPORTS

From *The FBI's Pre-Acquisition Planning for and Controls over the Sentinel Case Management System* (Sentinel I) Report dated March 2006:

1. Ensure that the system security and Independent Verification and Validation plans are completed as soon as possible after the contract is signed.
2. Ensure that the Sentinel Program Management Office is staffed to a level that will support Sentinel's aggressive delivery schedule.
3. Obtain a tool that will allow for the effective implementation of an Earned Valued Management process and fully implement this process.
4. Discuss with other intelligence community and law enforcement agencies their information sharing requirement to ensure compatibility with those systems in the requirements and design of Sentinel.
5. Ensure that an effective system is in place to accurately track and control Sentinel's development costs.
6. Complete a comprehensive Sentinel training plan with realistic schedule and cost estimates and include these training cost estimates in the estimates of overall project costs.
7. Establish a method to monitor the operational impact of a potential second reprogramming and identify for resolution any degrading of the FBI's mission-critical functions due to the diversion of funds to the Sentinel project.

From the *Sentinel Audit II: Status of the FBI's Case Management System* (Sentinel II) Report dated December 2006:

1. Ensure the management reserve is based on an assessment of project risks for each phase and for the project overall.
2. Periodically update the estimate of total project costs as actual cost data is available.
3. Complete contingency plans as required by the Sentinel Risk Management Plan.

4. Ensure that the independent verification and validation process is conducted through project completion.
5. Complete hiring as soon as possible for the vacant PMO positions needed during the current project phase.

From the *Sentinel Audit III: Status of the FBI's Case Management System* (Sentinel III) Report dated August 2007:

1. Reconsider the four-phase approach to developing Sentinel to limit the scope of future phases to allow them to be completed in 9 months or less.
2. Negotiate decreases in the cost of future phases if requirements are deferred in that phase.
3. Collect and report EVM data for both the performance measurement baseline approved at the integrated baseline review as well as the revised performance measurement baseline.
4. Reconcile the discrepancy between the costs Lockheed Martin reported for Phase 1 with Lockheed Martin's EVM data, and develop and implement policies and procedures to prevent any future discrepancies.
5. Develop and implement effectiveness measures for all risk mitigation plans.
6. Ensure that personnel assigned to manage Sentinel risks devote sufficient time to the risk and have the experience and authority to adequately manage the risk.
7. Document and track project issues, risks that have occurred, as well as plan to resolve those issues and their ultimate resolution.
8. Implement policies and procedures to ensure that any changes to the Bill of Materials receive proper authorization and that the changes can be reconciled to the Bill of Materials submitted in Lockheed Martin's proposal.
9. Implement policies and procedures to ensure that materials contained in Lockheed Martin invoices can be reconciled to the bill of materials or an FBI approval for a change to the bill of materials.

From the *Sentinel Audit IV: Status of the FBI's Case Management System* (Sentinel IV) Report dated December 2008:

1. Decide what data will be stored in Sentinel, how that data will be collected, and what FD forms Sentinel will replace and adjust the Systems Requirement Specification if necessary.
2. Decide which statistics will be stored in Sentinel and how those statistics will be entered into Sentinel, and adjust the Systems Requirement Specification if necessary.
3. Decide whether Sentinel will serve as the FBI's enterprise-wide records management system, and adjust the System Requirement Specification if necessary.
4. Complete the Sentinel FOC architecture.
5. Update the EVM System Description.
6. Provide better descriptions and justifications for EVM baseline changes.
7. Revise Attachment 1 of the current Sentinel Statement of Work to clarify the requirements with respect to Attachment 1 of the July 2005 version of the Sentinel Statement of Work.
8. Amend the Measurement Plan to reflect the addition of Phase 1 System Specification critical performance metrics (CPM) thresholds, and update the Measurement Plan as the CPM thresholds change in subsequent versions of the System Specification.
9. Revise the Sentinel Risk Management Plan to use the risk criteria contained in Version 1 of the Risk Management Plan.

SENTINEL PROGRAM MANAGEMENT OFFICE STAFF POSITIONS AND RESPONSIBILITIES

Program Leadership

Program Manager

The individual accountable for program outcome is the Program Manager. The Program Manager is responsible for cost, schedule, and performance including system capabilities deployed to the users; Organizational Change Management (OCM) leading to users accepting and employing Sentinel capabilities and budget preparation, defense, and execution. The Program Manager is also responsible for the Program Management Office's (PMO) organization, staffing, and operations; governance processes for program execution; communications between Sentinel and its stakeholders; systems requirements configuration management; prime contractor direction to ensure delivered capabilities meet requirements; and Chairs Task Order(s) Award Fee Board.

Deputy Program Manager

Two Deputy Program Managers support the Program Manager in carrying out his responsibilities. One Deputy Program Manager manages the system development and technology and the other Deputy Program Manager manages organizational change, program support to include budget and finances, training, communications, user representation and liaison.

Direct Reporting Staff

There are several staff members that report directly to the Program Manager.

Contract Officer

Oversees all Sentinel contract executions, including contractor task-order compliance, maintains alignment between task orders and Sentinel program needs, prepares change orders or other contract modifications as required, and also monitors contractual performance.

Contract Officer's Technical Representative

Assists the Contracting Officer with technical oversight.

General Counsel

Provides legal advice to the Program Manager and the Deputy Program Managers.

Quality Manager

Provides guidance, oversight and coordination related to quality control issues within the PMO and with the development contractor.

Program Advisor

Provides overall execution advice to the Program Manager and Deputy Program Managers.

Operations and Maintenance Unit

The Operations and Maintenance Unit (OMU) is responsible for Sentinel's Operations and Maintenance (O&M) Concept of Operations as well as oversight of Sentinel's deployed capabilities operations and maintenance. The OMU retains these responsibilities until Sentinel achieves Full Operating Capacity and total O&M responsibilities are transferred to Information Technology Operations Division (ITOD). The OMU establishes and maintains close collaboration with ITOD throughout Sentinel capability development. The OMU also plans for and coordinates deployment of Sentinel to all of the FBI receiving locations and units.

In exercising its O&M responsibilities, OMU coordinates with ITOD and relies upon the System Development Unit and Transition Management Unit for sustaining engineering matrix support in the following areas: systems and subsystems engineering, integration and testing, configuration management, certification and accreditation, patch release management, and training activities. OMU's operations and maintenance responsibilities are organized around ITOD's four tier structure with OMU responsible for Tiers 2-4 and ITOD responsible for Tier 1.

OMU skill requirements fall into two general skills area: support and sustainment of deployed capabilities; and, sustaining engineering to analyze and resolve deployed capabilities deficiencies. Specific OMU skill requirements are:

- Supportability life cycle systems engineering
- O&M requirements, analysis, and plans
- O&M coordination and execution
- Technical data requirements

Organization Change Management

Organizational Change Management (OCM) is responsible for preparing the user community for the cultural challenges associated with users' acceptance and employment of the capabilities of the Sentinel system. OCM is also responsible for being the intermediary between the Sentinel PMO and the user community, keeping the user community informed of Sentinel's progress toward meeting user requirements and the Sentinel PMO informed of user requests for Sentinel. OCM is the formal path for receiving new user originated requirements. The OCM team includes special agents, intelligence analysts, and professional staff who are on temporary assignment to the Sentinel PMO.

The OCM works closely with the System Development Manager and the prime contractor to ensure that business processes and Sentinel system solutions are properly aligned as the individual development phase's progress. OCM also works closely with the Deputy Chief Information Officer's Business Process Reengineering (BPR) staff to ensure two way exchanges on any impacts that BPR and Sentinel process changes may have on each other. OCM will be a significant Sentinel PMO player as Sentinel helps the FBI address its transformation objectives by:

- Representing the user community to the Sentinel Program and the Program to the user community,
- Ensuring that each phase, as developed, provides useful capabilities to the user community,
- Overseeing Sentinel PMO and prime contractor change management activities,
- Ensuring business processes and SENTINEL system solutions are aligned as the development phases progress, and
- Working closely with the Deputy Chief Information Officer's BPR staff.

OCM staff require the following specialized skills:

- A strong understanding of investigative and intelligence business process activities for the Bureau's Special Agent, Intelligence Analyst, and Professional Staff communities;
- Strong interpersonal skills;
- BPR insight/expertise;
- OCM expertise; and
- Requirements analysis expertise.

Training and Communications Unit

The Training and Communications (T&C) Unit is the Program Manager's representative for communicating program information. The T&C Unit is also responsible for the design and development of the program's communication strategies; makes sure all stakeholders are aware of, and accurately informed about the program's plans and accomplishments; is the primary contact point for external entities seeking information about the Sentinel program; acts as a liaison to the FBI's Inspection Division for Department of Justice Office of the Inspector General and Government Accountability Office reviews; coordinates and plans training; and ensures that all required system, O&M, and business process training is developed, tested, and executed in support of Sentinel's phase deployments.

User Representation and Policy Unit

The User Representation and Policy Unit (URPU) is responsible for the strategy employed for changing the FBI organization, to include how it carries out its overall mission, while enabling users to learn new behaviors, skills, and business processes. The URPU assists in providing robust training and outreach programs while the Sentinel Program evolves and deploys its functional capability. The URPU ensures that the FBI's overall strategy and user acceptance through continual process diagramming, requirements clarification, testing, communications, program advocacy, marketing, as well as the development and deployment of training.

Program Support Unit

The Program Support Unit is made up of the Program Integration Team (PIT) and the Business Management Team (BMT).

Program Integration Team

The PIT is responsible for developing and maintaining the Sentinel program baseline, tracking progress and risks against that baseline, and incorporating changes to the baseline as directed by the Program Manager. The PIT operates collaboratively with the other Line Units in defining, collecting, monitoring, and maintaining the Sentinel program baseline including documentation that defines that baseline. PIT has a key role in preparing material for use in oversight reviews, external documentation, and joint program activities.

Business Management Team

The BMT develops and maintains the program's investment, budget and spend plans. The BMT monitors, analyzes and reports on the program's Earned Value Management status. It also provides the Contracting Officer's Technical Representative who assists the CO in technical oversight of all Sentinel contract execution, and manages the administrative support elements.

Systems Branch

The Systems Branch is comprised of the Systems Development Unit (SDU), On-Site Staff, Systems Analysis Team, and Systems Engineering/Test Team.

Systems Development Unit

The SDU is responsible for the Sentinel system development in terms of both the overall system design and its implementation increments. It owns the technical performance outcome of the Sentinel program and is accountable for the systems requirements and delivering a system solution whose technical performance meets the user community's expectations. The Systems Development Unit Manager oversees the Sentinel capability development effort through several functional staffs.

- On-Site Staff — The On-Site Staff is responsible for direct and daily interactions with the prime contractor as a facilitator for effective, responsive development of Sentinel's capability by the Prime. On-Site Staff represents the Program Manager's primary independent source of information on Lockheed Martin's progress toward meeting the Sentinel development task orders, increments, and requirements.

- Systems Analysis Team — The Systems Analysis Team is responsible for Sentinel's requirements, design, and performance from a total system perspective and Sentinel's interoperability within the FBI Enterprise and with other federal agencies' systems.
- Systems Engineering/Test Team — The Systems Engineering/Test Team is responsible for development of Sentinel's individual increments/phases. It also serves as the core of the On-Site Team.

FEDERAL BUREAU OF INVESTIGATION'S
RESPONSE TO THE DRAFT REPORT



U.S. Department of Justice

Federal Bureau of Investigation

Washington, D. C. 20535-0001

October 29, 2009

The Honorable Glenn A. Fine
Inspector General
Office of the Inspector General
U.S Department of Justice
Room 4322
950 Pennsylvania Avenue, N.W.
Washington, D.C. 20530

Dear Mr. Fine:

The Federal Bureau of Investigation (FBI) appreciates the opportunity to review and respond to your audit entitled, "Sentinel Audit V: Status of the FBI's Case Management System" (hereinafter "Report").

We are pleased that the Report concludes the revised SENTINEL schedule is more realistic *and* that extending the completion of Phase 2 by three months increases the likelihood that SENTINEL will meet users' needs when completed. The increase in cost and schedule of Phase 2 will be absorbed within the program's overall cost and schedule. This investment will ensure the delivery of quality services to SENTINEL users.

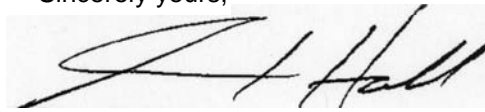
Additionally, the FBI is pleased that this Report reflects, as noted in other OIG and Government Accountability Office (GAO) reports, the SENTINEL Program has steadily improved and refined its business practices. In particular, in September 2008, the GAO applauded SENTINEL for implementing five key methods for acquiring commercial information technology solutions and suggested the Department of Justice adopt these methods as standard practices. We are heartened to think the FBI's SENTINEL IT Project would serve as the model to the Department for all IT Projects.

With respect to the current Report, we remain optimistic readers of the Report will not mistakenly believe the SENTINEL Program is nine months behind schedule and \$18 million over cost. As previously explained in your SENTINEL Audit IV Report, the increase in the estimated cost of SENTINEL was based upon a legal, contractual rebaselining of the SENTINEL schedule and associated cost. This cost increase was attributed to the re-engineering efforts that occurred after the completion of Phase 1, and acceptance of the new strategic plan in November 2007. In your prior report, you complemented these changes to the development of SENTINEL as a "prudent" approach and acknowledged the resulting cost increase was justified.

We also remain optimistic that members of Congress, Office of Management and Budget, Office of the Director of National Intelligence, the Department of Justice Chief Information Officer, and GAO will recall the unanimous agreement in 2007 on the need to adopt an incremental delivery methodology for the future phases of SENTINEL based upon lessons learned in Phase 1. The approved rebaselining of SENTINEL was critical to the future successes of SENTINEL.

In conclusion, based upon a review of the Report, the FBI concurs with all six recommendations directed to the FBI and has already implemented measures to resolve all of the identified measures. The FBI appreciates the professionalism exhibited by your staff in working jointly with our representatives to complete this Report. Enclosed herein are the FBI's responses to the recommendations. Please feel free to contact me at 202-324-6080 should you have any questions or need further information.

Sincerely yours,

A handwritten signature in black ink, appearing to read "D. Hall", is centered below the closing. The signature is fluid and cursive.

Dean E. Hall
Associate Executive Assistant Director and
Deputy Chief Information Officer Information
and Technology Branch

Enclosure

FBI RESPONSE TO THE OIG'S RECOMMENDATIONS
RE: SENTINEL AUDIT V: STATUS OF THE FEDERAL BUREAU OF
INVESTIGATION'S CASE MANAGEMENT SYSTEM

Recommendation 1: “Update the Sentinel Staffing Plan to ensure that all of the needs of the Sentinel PMO are covered by positions within the plan.”

FBI Response to Recommendation #1: Concur: The SENTINEL Program Management Office (PMO) is currently working on updating the staffing plan and anticipates this update to be completed by November 2009. This new plan will identify all staffing needs through the end of the program.

Recommendation 2: “Expediently fill the vacant positions within the updated Sentinel PMO Staffing Plan to ensure that the staffing needs of the project are being met.”

FBI Response to Recommendation #2: Concur: All key staffing positions have been filled and the program has maintained high staffing levels. Once the SENTINEL PMO has completed the update of the staffing plan, any newly created vacancies will be filled as soon as possible.

Recommendation 3: “Incorporate more user involvement throughout the remainder of Sentinel development.”

FBI Response to Recommendation #3: Concur: The SENTINEL Program continues to increase the number of users permanently and temporarily assigned to the program. There are currently 16 users assigned to the program and the PMO is actively recruiting additional personnel on temporary duty status. These users will be working closely with the developers throughout the remainder of the program. The program will continue to be responsive to user feedback through ongoing outreach activities with our stakeholder network.

Recommendation 4: “Develop a detailed Data Migration Plan for the migration of data from FBI case files.”

FBI Response to Recommendation #4: Concur: The SENTINEL PMO and Lockheed Martin have a Data Migration Plan in place that forms the basis for data migration. The level of work required is detailed in each segment. This plan is updated during the segment planning process and includes projected activities and incorporates lessons learned from the previous segment.

Recommendation 5: “Ensure that Lockheed Martin measures and reports Sentinel system performance in accordance with the timeframes identified in the Sentinel Measurement Plan.”

FBI Response to Recommendation #5: Concur: Lockheed Martin (LM) reports System Performance Measurements in accordance with the Measurement Plan V5.0, dated July 28, 2009. However, some further modification to the plan is necessary since not all performance measurements provide value because of the short time between reporting periods. The FBI will ensure that Lockheed Martin measures and reports SENTINEL system performance in accordance with the timeframes identified in the modified SENTINEL Measurement Plan.

Recommendation 6: “Develop a goal for SENTINEL response time that includes the network on which SENTINEL data travels.”

FBI Response to Recommendation #6: Concur: SENTINEL currently meets the response times as specified within System Requirement Specification using the legacy network. However, the ITB is refreshing and upgrading the current FBINet to better service all customers.

**OFFICE OF THE INSPECTOR GENERAL ANALYSIS AND
SUMMARY OF ACTIONS NECESSARY TO CLOSE THE REPORT**

The OIG provided a draft of this audit report to the FBI for its review and comment. The FBI's response is incorporated as Appendix VI of this report. The following provides the OIG's analysis of the response and summary of the actions necessary to close the report.

Analysis of FBI Response

In response to our audit report, the FBI concurred with our recommendations and discussed the actions it will implement in response to our findings. However, the FBI also provided additional comments in its response that did not pertain to our recommendations.

In its response to our draft report, the FBI stated that it "remain[s] optimistic readers of the Report will not mistakenly believe the Sentinel Program is nine months behind schedule and \$18 million over cost." The response stated that the increase in the overall estimated cost of Sentinel was approved in a November 2007 rebaselining of Sentinel's schedule and cost. We agree that the rebaselining increased the overall budget for Sentinel to \$451 million and extended the development of Phase 2 from May 2008 to July 2009, and Phase 4 from December 2009 to June 2010. However, we note that the FBI does not dispute that the full development of Sentinel is now planned to be completed in September 2010, 9 months later than the December 2009 date planned at the outset of the project. The FBI also does not dispute that since the approved rebaselining, the development costs for Phase 2 have increased by \$18 million. Our report clearly states that while the estimated cost and schedule to develop Phase 2 as well as the schedule for the entire project have increased, the FBI has not revised the overall cost of the Sentinel program and has addressed the Phase 2 cost increase using funds from the project's management risk reserve and other budget reallocations. In our opinion, the cost and schedule growth of Phase 2 heightens the risk and probability for increases to the overall cost of the Sentinel Program and its schedule for completion.

Recommendations

The following provides our summary of actions necessary to close the recommendations.

1. **Resolved.** The FBI concurred with our recommendation to update the Sentinel Staffing Plan to ensure that all of the needs of the Sentinel Program Management (PMO) are covered by positions within the plan. In its response, the FBI stated that the Sentinel PMO is updating the Sentinel Staffing Plan to identify all staffing needs through the end of the

program. This recommendation can be closed when the FBI provides an updated Sentinel Staffing Plan, which ensures that the needs of the Sentinel PMO are covered by positions within the plan.

2. **Resolved.** The FBI concurred with our recommendation to expeditiously fill the vacant positions within the updated Sentinel PMO Staffing Plan to ensure that the staffing needs of the project are met. The FBI stated that all key staffing positions have been filled and that the program has maintained high staffing levels. This recommendation can be closed when the FBI provides documentation that the vacant positions within the updated Sentinel PMO Staffing Plan have been filled.
3. **Resolved.** The FBI concurred with our recommendation to incorporate more user involvement throughout the remainder of Sentinel development. The FBI said that the Sentinel program continues to increase the number of users permanently and temporarily assigned to the program and is actively recruiting additional personnel on temporary duty status. Additionally, the FBI said that the Sentinel program plans to continue to be responsive to user feedback through ongoing outreach activities with its stakeholder network. This recommendation can be closed when the FBI provides documentation demonstrating that the Sentinel PMO has incorporated more user involvement in the remainder of Sentinel's development.
4. **Resolved.** The FBI concurred with our recommendation to develop a detailed Data Migration Plan for the migration of data from FBI case files into Sentinel. The FBI's response stated that Lockheed Martin and the Sentinel PMO have a Data Migration Plan in place that forms the basis for data migration and that the level of work required is detailed in each segment. This recommendation can be closed when the FBI provides the detailed Data Migration Plan that demonstrates that the FBI's methodology for migrating data from FBI case files is sound.
5. **Resolved.** The FBI concurred with our recommendation to ensure that Lockheed Martin measures and reports Sentinel system performance in accordance with the timeframes identified in the Sentinel Measurement Plan. In its response, the FBI stated that it will ensure that Lockheed Martin measures and reports Sentinel system performance in accordance with the timeframes in the Sentinel Measurement Plan. The response also stated that the Measurement Plan requires modification since not all of the performance measures provide value because of the short time between reporting periods. This recommendation can be closed when the FBI provides documentation demonstrating that Lockheed Martin measures and reports Sentinel system performance in accordance with the timeframes identified in the Sentinel Measurement Plan.
6. **Resolved.** The FBI concurred with our recommendation to develop a goal for Sentinel response time that includes the network on which

Sentinel data travels. The FBI's response to our recommendation stated that Sentinel currently meets the response times as specified within the System Requirement Specification using the legacy network and that the Information Technology Branch (ITB) is refreshing and upgrading the current FBI Net to better service all customers. This recommendation can be closed when the FBI provides documentation demonstrating that the FBI has set a goal for Sentinel response times that include the network on which Sentinel data travels.