



**USAID**  
FROM THE AMERICAN PEOPLE

**OFFICE OF INSPECTOR GENERAL**

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**PHOENIX POST  
IMPLEMENTATION AUDIT OF  
USAID MISSION USERS'  
NEEDS**

AUDIT REPORT NO. A-000-08-002-P  
January 11, 2008

WASHINGTON, DC



**USAID**  
FROM THE AMERICAN PEOPLE

*Office of Inspector General*

January 11, 2008

**MEMORANDUM**

**TO:** Chief Financial Officer, David D. Ostermeyer  
Chief Information Officer, David C. Anewalt

**FROM:** Director IG/A/ITSA, Melinda G. Dempsey /s/ [Lisa M. W. Banks for]

**SUBJECT:** Report on Phoenix Post Implementation Audit of USAID Mission Users' Needs  
(Audit Report No. A-000-08-002-P)

This memorandum transmits the Office of Inspector General's final report on the subject audit. In finalizing this report, we considered your comments on the draft report. Your comments are presented in their entirety in Appendix II.

This report contains eight recommendations to help improve the implementation of the Phoenix financial system overseas and future information technology investment projects. Based on the responses received to our draft report, management decisions have been reached on Recommendations Nos. 1, 2, 3, 4, 5, 6, 7, and 8. Please notify the Bureau for Management's Audit, Performance and Compliance Division when final action is completed.

I appreciate the cooperation and courtesies extended to my staff during the audit.

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# SUMMARY OF RESULTS

In an effort to correct a weakness<sup>1</sup> with its accounting system, USAID initiated the Phoenix Overseas Deployment Project to implement a single, agencywide integrated core financial system. As such, the Office of Inspector General in Washington, DC, initiated this Phoenix post-implementation audit to determine whether USAID deployed its core financial system, Phoenix, to mission field locations in a manner that fulfilled the users' needs with respect to system functionality, system performance, reporting, and user support. The results of a post-implementation review should be used to strengthen the system and the system deployment procedures. (Pages 3-4.)

Overall, this audit concluded the following:

- USAID's implementation of Phoenix at selected missions met users' needs with respect to reporting, although the quality of information and the ability to create reports needs improvement. These problems occurred because USAID did not (1) implement its reporting strategy in an organized manner, (2) adequately manage risks related to reporting needs, and (3) actively monitor reports for performance. As a result, missions are developing their own reporting tools to address reporting needs. (Pages 5–11.)
- USAID's implementation of Phoenix at selected missions met users' needs with respect to system performance, although some mission users were unable to work efficiently because of unstable system performance. This problem occurred because USAID did not (1) implement an effective performance monitoring process, (2) develop a completed business continuity plan for Phoenix, and (3) perform volume and stress testing. As a result, users resorted to working around the system performance limitations. (Pages 11–18.)
- USAID's implementation of Phoenix at selected missions met users' needs with respect to user support, except with respect to training and education for mission users. This problem is primarily attributed to USAID's aggressive deployment schedule and a reduction in independent, onsite postdeployment support owing to budgetary constraints. As a result, USAID risks instituting inefficiencies in the missions' processes to generate reports and process transactions. (Pages 18–22.)
- USAID's implementation of Phoenix at selected missions met users' needs with respect to functionality, except for inefficiencies in processing trust funds, disbursements, and functionality for invoice tracking, prompt pay processing, and Department of Health and Human Services (DHHS) transactions. These problems occurred primarily because the system was deployed before it was ready and functional requirements documentation was not maintained. As a result, mission users were not provided the tools needed to efficiently and effectively complete some daily tasks. In addition, mission users maintained cuff records to accommodate the gaps in functionality. (Pages 22–26.)

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<sup>1</sup> A deficiency that is determined to be of such significance that it should be reported to the next management level.

As such, this audit makes eight recommendations to help USAID address mission users' concerns with reporting, systems performance, user support, and functionality. (Pages 10–11, 17–18, 21, and 25.)

In their response to the draft report, USAID management agreed to take corrective action on all eight recommendations. However, USAID management commented that many of the recommendations are dependent upon budget resource availability. Based on USAID's response to the draft report, management decisions have been reached on Recommendation Nos. 1, 2, 3, 4, 5, 6, 7, and 8. (Page 27.)

# BACKGROUND

In an effort to correct a longstanding material weakness<sup>2</sup> with its accounting system, USAID initiated the Phoenix Overseas Deployment Project to implement a single, agencywide integrated core financial system. Phoenix is a commercial off-the-shelf core accounting system configured for USAID. It replaced the accounting module in the New Management System and the Mission Accounting and Control System used in Washington and the overseas missions, respectively. USAID implemented Phoenix in USAID/Washington in December 2000 and completed deployment to 51 controllers' missions in May 2006 for an estimated cost of \$63.6 million. As such, Phoenix is now considered to be the accounting system of record for USAID.

The purpose of a post-implementation review is to evaluate the effectiveness of the system deployment after the system has been in production for a period of time (normally 6 months). The objectives are to:

- Determine if the system implementation met its intended objectives.
- Identify ways to improve the final delivery of a product.
- Collect and use the knowledge learned throughout the project to optimize the delivery and output of future projects.

The results of a post-implementation review should be used to strengthen the system as well as the system deployment procedures. One area that should be addressed in the post-implementation review report is customer reactions and satisfaction.

In 2005, the IT Governance Institute® (established to advance international standards in directing and controlling an enterprise's information technology) issued "Control Objectives for Information and related Technology" (CoBIT®) 4.0. CoBIT 4.0 provides best practices and presents activities in a manageable and logical structure. CoBIT's best practices represent the consensus of experts and are strongly focused on control and less on execution. These practices will help optimize information technology (IT) enabled investments, ensure service delivery, and provide a measure against which to judge outcomes and results if errors occur.

USAID's IT Governance implementation is based on CoBIT 4.0 by:

- Making its suggested processes relevant to federal IT organizations.
- Focusing on IT governance roles and responsibilities.
- Promoting the use of artifacts to demonstrate control over processes.

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<sup>2</sup> A deficiency that is determined to be of such significance that it should be reported to the next management level.

## **AUDIT OBJECTIVES**

As part of its fiscal year (FY) 2006 audit plan, the Office of the Inspector General, Information Technology and Special Audits Division, performed this audit to answer the following questions:

- Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to reporting?
- Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to system performance?
- Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to user support?
- Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to functionality?

Appendix I contains a discussion of the audit's scope and methodology.

## **ABOUT THIS REPORT**

For each finding in this report, the first major section discusses the problem areas. The second major section discusses the causes of the problem areas. The third major section discusses the impact of the problem areas.

# AUDIT FINDINGS

## **Did USAID’s implementation of Phoenix at selected missions meet users’ needs with respect to reporting?**

USAID’s implementation of Phoenix at selected missions met users’ needs with respect to reporting, although the quality of information and the ability to create reports needs improvement.

Phoenix met users’ reporting needs for some financial management activities. Specifically, reporting has improved (1) the payments process and (2) monthly and quarterly mission management reporting requirements.

Nonetheless, the quality of information and ability to create reports needs improvement. The following section discusses this problem in detail.

### **Quality of Information and Ability to Create Reports Needs Improvement**

Summary: USAID did not fully implement its goal to provide access to timely, complete, and accurate financial information from Phoenix and its ancillary feeder and interface systems as documented in the “Functional Configuration Team: Phoenix Overseas Deployment Reporting Strategy.” Specifically, according to mission users, the quality of reporting information and the time required to create reports needs improvement. These problems occurred because USAID did not (1) implement its reporting strategy in an organized manner, (2) adequately manage risks related to reporting needs, and (3) actively monitor reports for performance. As a result, missions are developing their own reporting tools to address reporting needs. Moreover, USAID is at risk of receiving inconsistent information for management reporting, congressional inquiries, and Agency data calls.

**Reports Need Improvements** – According to USAID’s “Functional Configuration Team: Phoenix Overseas Deployment Reporting Strategy,” dated November 21, 2003, the long-term goal of ongoing steady-state reporting was to:

...support all USAID information needs by providing USAID information customers with access to timely and accurate financial information from Phoenix and its ancillary feeder and interface systems.

However, although USAID has moved into the steady state mode for the Phoenix Overseas Deployment (POD) Project, the Agency has not fully met its goal to provide its customers with access to quality information that is timely, accurate, and complete. Specifically, although 80 percent of users surveyed stated that reports (including standard, Business Objects Enterprise, and Phoenix Viewer reports) met their needs, 41 of 70 users (approximately 59 percent) indicated that reports need improvement—predominantly with respect to the quality of the reporting information and performance in creating reports.



Similarly, according to USAID's "Phoenix Overseas Deployment Project Closeout and Post-Implementation Review Report," dated October 6, 2006, 67 percent of the respondents indicated dissatisfaction with reports.

In addition, 55 percent of the respondents encountered inaccurate data with reports, while only 15 percent had not encountered inaccurate data. (The remaining 30 percent indicated that they were sometimes satisfied with reports.) Problems encountered included the following:

- The summary totals did not match details.
- Pipeline data often showed negative balances.
- End of prior quarter information showed double the obligated amount.
- Negative open obligations.

The following paragraphs detail the reporting deficiencies identified.

**Quality of Information** – With respect to the quality of reporting information, 32 of 70 users surveyed (approximately 45 percent) reported concerns that reports are either not complete or do not provide useful information. For example:

- Twenty-one users identified concerns that some reporting information was not useful and resulted in users maintaining cuff records related to vendor information, voucher tracking, payments by vendor, and accrual reporting information for cognizant technical officers.
- Eight users identified concerns in other areas such as incomplete information obtained from the Undisbursed Payment Query, inaccurate accrual information, periodic inconsistent results from the R0210 (Transaction Detail Report), and reports that excluded historical information not included in the migration.

Of the eight users, seven identified problems with the pipeline<sup>3</sup> reports that USAID had planned to certify as accurate. (USAID did not confirm whether the certification was complete.) According to those users, the report was missing the subactivity code description—a key element needed for reconciling purposes. Other users commented that the pipeline report is not user-friendly and that additional analytical and financial information would be helpful. According to Agency officials, as stated in a footnote to the pipeline reports, the report's detail amounts will not always match the summary for the following reasons:

- The report includes standard voucher and journal voucher cash adjustments for quarter and year end.
- For recently migrated Phoenix missions, prior year and current year pipeline amounts will be affected by missing transactions.

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<sup>3</sup> Pipeline: The amount of funds obligated but not expended; the difference between cumulative obligations and cumulative expenditures, including accruals.

- The calculation method used for the pipeline amount in the pipeline report differs from the calculation method used in document level pipeline reports.

In addition, six of the eight users identified concerns with accuracy, completeness, and/or timing for the R201, Obligations by Fiscal Year Report, which tracks the obligated, advanced, liquidated, and outstanding amounts at the accounting line level. According to users, for some unknown reason, when the report was run in the morning it was missing obligation or disbursement data, but the information was included when the report is run in the afternoon.

In addition, of the 10 mission controllers and deputy mission controllers surveyed:

- Sixty percent indicated that management operational information related to pipeline, operating expense budget data, and accruals in the Standard Phoenix and Business Objects Enterprise reports was not useful. For example, one mission controller commented that the R201, Obligations by Fiscal Year Report, does not contain transaction descriptions necessary to review posting errors and budget planning. In addition, a Phoenix report has not been developed to monitor and manage personal service contracts.
- Fifty percent responded that the information available in Phoenix Viewer was not useful. For example, mission controllers indicated that information obtained through Phoenix Viewer must be sorted and edited extensively in Excel to produce useful information in user-friendly format.

**Ability to Create Reports** – With respect to system response time<sup>4</sup> when creating reports:

- Nine of 95 users reported that response time is generally too slow when creating Business Objects Crystal Enterprise<sup>5</sup> and Phoenix standard reports over the intranet. For example, one user estimated that, on average, month-end Business Objects Reports could take up to 2 hours to run. Another user reported that he does not create reports in the afternoon because the system response is too slow. Two users commented that their local instance of Phoenix Viewer is used to create needed reporting information because it is faster than using Business Objects Crystal Enterprise and Phoenix standard reports.
- Five users commented that setting report parameters was time-consuming and affects the amount of time needed to create reports.
- Five of the mission controllers surveyed commented that the Phoenix implementation has reduced the efficiency of their mission operations primarily because of the

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<sup>4</sup> Response time: The amount of time between a request for a network service and a response to the request.

<sup>5</sup> Business Objects Enterprise provides users with standard reports that incorporate a variety of parameters.

increased effort and time required to produce operational reports. For example, during an effort to generate a report of the Agency's operating expense obligations for the past 4 years, it took the system 2 1/2 hours to produce the report.

**Reasons for Reporting Difficulties** – As discussed below, the problems with Phoenix reporting occurred because USAID did not (1) follow through with its reporting strategy in an organized manner, (2) adequately manage risks related to reporting needs, or (3) actively monitor the performance of reports.

**Reporting Strategy Not Implemented in an Organized Manner** – The Agency's difficulty in developing a reporting solution that provides accurate, complete, and timely information is attributable, in part, to USAID not implementing its reporting strategy in an organized manner. USAID's reporting strategy was initially documented in the "Phoenix Overseas Reporting Strategy" (henceforth referred to as "strategy document") in November 2003. The strategies developed to meet the long-term requirements for information were to:

- Design a database for easy information access.
- Provide information access options for all types of users.
- Implement an efficient report development process.
- Conduct a sustained customer outreach effort.

To implement the aforementioned strategy, USAID documented the high-level requirements that would serve as the basis for building the reporting database, and developed the reports and queries intended to satisfy the critical mission information needs of the pilot missions and to continue the reporting development and maintenance process after the overseas deployment. However, based on Agency officials' responses to our questions during the Information Technology (IT) Governance audit,<sup>6</sup> before the high-level requirements could be implemented, the approach was abandoned and a report requirements traceability matrix that detailed the Agency's approach to report development was never prepared. As such, at the time of the Phoenix rollout to the pilot missions, 13 of the 18 critically needed reports were found deficient owing to concerns with incomplete data in reports, negative balances, missing data, data not useful for user needs, and incorrect balances or calculations.

According to Agency officials, the current reporting strategy is based on requests for new reports, enhancements, and corrections that are reviewed, analyzed, and (if approved) prioritized for change request submission. Each approved change request goes through the standard developmental process, which includes establishing requirements. The Reports Team continues to release new reports/enhancements on a quarterly basis.

However, the reporting strategy is a reactive approach that conducts the requirements analysis during the change request process. Instead, USAID needs to adopt a proactive

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<sup>6</sup> *Audit of USAID's Information Technology Infrastructure* (Audit Report No. A-000-05-006-P, February 22, 2005).

approach that first considers existing reports available from all sources (e.g., standard, Business Objects Enterprise, mission developed) and that assesses users' data/information needs prior to report development and/or enhancements.

**Ineffective Management of Reporting Risks** – Another factor that contributed to USAID's current reporting dilemma stems from the data/information risk assessment conducted during the project planning. USAID identified 12 risks for the Phoenix Overseas Deployment Project related to data/information. The Agency's mitigation plans for 3 of the 12 risks had a negative impact on the reporting solution and the Agency's current situation, as discussed below.

- **System testing:** USAID did not mitigate the medium risk assessed relating to system testing (which is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements). As such, according to USAID's "Phoenix Overseas Deployment Pilot Lessons Learned," December 10, 2004, some reports were promoted to independent system testing prior to undergoing complete functional testing. This (1) violated the configuration management process, (2) increased the number of incidents during independent tests, and (3) subsequently increased the effort and time associated with resolving test incidents.
- **Critical reports:** The risk of not having critical reports to continue operations was assessed as high. As a part of the contingency plan, USAID developed an ad hoc tool that allowed users to query their data according to their needs. However, USAID did not effectively mitigate this risk because the Agency was unsuccessful in its attempt at developing that tool. As a result, USAID created Phoenix Viewer, a stand-alone reporting tool that gives mission users access to their basic Phoenix information, which according to Mission Controllers, must be extensively sorted and edited in order to produce useful information in a user-friendly format.
- **Data migration:** Because the risk for data migration was assessed as low, neither a risk mitigation plan nor a contingency plan was required, and hence not developed. However, mission users expressed concerns that some reporting information is incomplete because of data not included in the migration. (See "Quality of Information" section of this finding.) In addition, according to mission users, cuff records are maintained to meet business needs.

**Reports Not Actively Monitored** – A final attributing factor to USAID's reporting difficulty was that USAID did not actively monitor the performance of reports.

USAID has reports monitoring capabilities that provide important information about the time that it takes to run scheduled Business Objects reports. For example, the Crystal Usage Report documents the number of times Business Objects/Crystal reports are accessed. According to Crystal Usage Report, the Document Line Level Liquidation Report (R0211), which allows users to review the transaction history and unliquidated balances of individual obligation document line items, was accessed a total of 9,358 times by 46 users from October 1, 2006, through February 23, 2007. However, it took 8 of the 47 users (17 percent) well over an hour to run the report.

A review of these performance statistics should prompt an investigation of possible problems in either accessing or creating reports. However, according to Agency officials, the monitoring report is provided only upon request. Typically, the criteria for follow-up

are user complaints of long run-times to generate a report or inquiries into general slow performance of Business Objects. However, according to USAID officials, reports monitoring would require additional funding.

**Impact of Reporting Deficiencies** – Although Agency officials state that Phoenix is the official system of record, the lack of user confidence in the integrity of the standard reports and the reporting information led to missions developing their own reporting tools. As a result, the Agency is at risk of creating duplicative and/or unneeded reports, thereby missing an opportunity to save the Agency’s scarce resources. In addition, the Agency risks receiving inconsistent information for management reporting, congressional inquiries, and Agency data calls—which is contrary to one of the ultimate objectives of the POD project.

Further, as of February 14, 2007, there were 123 outstanding requests for improvements and enhancements in the research status and an additional 59 requests in research that would affect multiple reports. (USAID did not provide supporting documentation for the outstanding requests that explain specifically what changes or enhancements were requested.)

According to USAID officials, the overall reporting strategy will be reviewed and assessed to determine the best ways to address users’ concerns. Nonetheless, at a time when the Agency is challenged with budget cuts and fewer staffing resources, USAID needs to ensure that the reports that it continues to develop and support meet users’ needs. Therefore, this audit makes the following recommendations.

*Recommendation No. 1: We recommend that USAID’s chief financial officer conduct an analysis of outstanding reporting issues and requests from Phoenix users’ to assess the overall Phoenix users’ information needs. At a minimum, this analysis should include preparing and implementing a detailed plan with timeframes to (1) fully document mission users’ specific reporting needs, (2) eliminate reporting gaps in information provided from Phoenix, (3) eliminate unneeded reports supported by the Agency, and (4) use mission-developed reports to the extent possible.*

Evaluation of Management Comments – In response to the draft report, USAID management agreed with the recommendation. To correct the weakness, USAID plans to:

- Establish and formalize a working group by February 29, 2008, to discuss and document mission reporting needs and address gaps in current reporting information provided by Phoenix.
- Review and eliminate reports that are no longer used by June 30, 2008.
- Assess mission-developed reports through September 30, 2008, as resources permit.

Based on USAID’s management response, a management decision has been reached for Recommendation No. 1.

*Recommendation No. 2: We recommend that USAID's chief financial officer develop and implement a process to proactively monitor and address slow response times for generating Business Objects Enterprise reports.*

Evaluation of Management Comments – In response to the draft report, USAID management stated that the Office of the Chief Information Officer periodically runs a report that shows the time taken to run reports during a defined time period. The Office of the Chief Financial Officer will begin monitoring these reports daily and the process will be formalized by February 29, 2008.

Based on USAID's management response, a management decision has been reached for Recommendation No. 2.

## **Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to system performance?**

USAID's implementation of Phoenix at selected missions met users' needs with respect to system performance, although some mission users were unable to work efficiently owing to unstable system performance.

USAID achieved its goal of deploying a Web-based application that permits users from around the world to process transactions in an integrated financial management system. This success contributed to USAID's ability to address its longstanding material weaknesses related to the Agency's financial statements and the financial management system.

Nonetheless, approximately 50 percent of end-users indicate that improvement is needed with system performance for transaction response time. In addition, 41 percent of the users encountered difficulties with system performance. Further, 29 percent of the users reported that they had recently experienced a loss of connection. The following section discusses the system performance problems in detail.

## **System Performance Problems**

Summary: Contrary to best practices prescribed by CoBIT 4.0, USAID did not fully meet users' needs with respect to system performance. This occurred because USAID did not: (1) perform volume and stress testing prior to deployment, (2) provide continued funding for users' concerns with system performance, (3) implement an effective performance monitoring process, and (4) develop a completed business continuity plan for Phoenix. As a result, users resorted to working around the system performance limitations.

**System Performance Problems Identified** – CoBIT 4.0, section A11.1, "Definition and Maintenance of Business Functional and Technical Requirements," calls for identifying, prioritizing, specifying, and agreeing on business functional and technical requirements covering the full scope of all initiatives required to achieve the expected outcomes of the IT-enabled investment program. The section also calls for definitions of the criteria for acceptance of the requirements. Requirements should take performance into account,

among other things. In addition, section AI2.5, “Configuration and Implementation of Acquired Application Software,” states that issues to consider when implementing a system include the organization’s information architecture and system performance efficiency.

Of the users surveyed, 35 out of 70 (or 50 percent) indicated that the system performance for transaction response time needed improvement. Further, 41 percent of the users reported that they had recently encountered difficulties with system performance, while 29 percent reported that they had recently experienced times when they lost connection.

For example, mission users indicated that system response time was slower in the afternoons. In addition, mission users experienced “timed-out” errors or system freezes and lost connectivity throughout the day owing to poor systems performance. One user estimated that it took approximately 25 minutes in the morning and 30 minutes in the afternoon to create and process a payment authorization. That same user estimated that, on average, month-end Business Objects Reports could take up to 2 hours to run. Another user reported that he does not create reports in the afternoon because the system response is too slow.

Likewise, in USAID’s “Phoenix Overseas Deployment Project Closeout and Post-Implementation Review Report,” dated October 6, 2006, 26 percent of the users surveyed reported that they recently encountered difficulties with system performance, while 33 percent<sup>7</sup> reported that they had recently experienced times when they lost connection.

Based on an analysis of USAID’s performance data for the 3-month period from September 1 through November 28, 2006, USAID’s accounting stations in Almaty and Pretoria experienced latency<sup>8</sup> measurements that did not meet USAID’s 600 milliseconds (ms) performance goal. Specifically, Almaty’s roundtrip times for the 3-month period averaged 710ms, while Pretoria averaged 736ms.

In addition, on January 30, 2007, we noted that:

- For Almaty’s Very Small Aperture Terminal (VSAT) connection, although bandwidth utilization was in an acceptable range of 61–70 percent for approximately 90 percent of the month, latency was very slow, performing:
  - Between 600 and 800ms approximately 90 percent of the time.
  - Greater than 800ms approximately 10 percent of the time.
- For Pretoria’s VSAT connection, although bandwidth utilization was in the 61–70 percent range for approximately 78 percent of the month and 81–90 percent for approximately 20 percent of the month, latency was very slow at times, performing:

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<sup>7</sup> 25 percent of the users did not respond to this question.

<sup>8</sup> Latency is generally the amount of time required for a data packet to traverse the network from the source to destination, and refers to a delay factor that will inherently affect any transaction that uses that component.

- Between 600 and 800ms approximately 23 percent of the time.
- Greater than 800ms approximately 12 percent of the time.

**Causes of System Performance Problems** – The above problems occurred primarily because (1) volume and stress testing were not performed prior to deployment, (2) support for system performance was reduced because of budget cuts, (3) the Phoenix business continuity plan was incomplete, and (4) performance monitoring was ineffective, as discussed below.

**Volume and Stress Testing** – The purpose of volume and stress testing is to evaluate system performance during peak hours.

- Volume testing is performed to determine the maximum volume of records (i.e., data) that the application can process at one time.
- Stress testing is performed to determine the maximum number of concurrent users/services that the application can process.

However, volume and stress testing was not performed prior to deployment. Instead, USAID conducted limited performance testing at selected missions to (1) assess the hardware in place, (2) determine acceptable performance at USAID/Washington and a mission with good telecommunication capabilities, and (3) identify which version of the Phoenix software to pursue.

According to USAID officials, volume and stress tests were not performed because Phoenix performance was deemed as acceptable based on users' ability to complete their work in a reasonable amount of time. However, Agency officials noted that, because Phoenix is Web-based, the technical infrastructure is the major factor in performance. As such, if the Internet is not functioning at a particular mission, overall performance may be affected, regardless of Phoenix's performance. Agency officials also noted that the Phoenix team coordinates with the Office of the Chief Information Officer (CIO) when mission users alert the team to an issue with performance.

**Support for System Performance Reduced because of Budget Cuts** – Budget cuts, which affected the level of support provided to mission users for monitoring and addressing users' system performance concerns, also impacted USAID's ability to meet users' needs with respect to performance. Specifically, in a March 10, 2006, Agency Notice, the Acting CIO stated that significant budget cuts totaling \$8.6 million forced the Agency to reduce the level of service provided to mission users for user support. Included in the budget cuts were the following items, which affected system performance:

- No after-hours technical support for reaction to unplanned infrastructure problems would be funded except by use of compensatory time. As such, contractors would be compensated by giving them time off from their normal shift. Therefore, customers should expect reduced staff during normal day shifts and slower response to service requests.



- Travel would be no longer funded for contractors in Telecommunications and Systems Infrastructure and further travel would have to be funded by the benefiting mission for servers. Problems that required specialized technical expertise from outside the capabilities of existing staff would require outside funding.
- Mission moves, especially of telecommunications equipment that has to be moved by central contractors, would be supported only if the missions could provide funding for labor and all travel costs.
- There would be a 14 percent day-time staff reduction in telecommunications operations support. Customers should expect slower response to (1) changes they want to make to connectivity and (2) connectivity problems.

**Ineffective Performance Monitoring** – In Audit Report No. A-000-05-006-P, *Audit of USAID's Information Technology Infrastructure* (February 22, 2005), the Office of Inspector General recommended that USAID's chief financial officer (CFO) (1) develop and implement formal performance goals for transaction response times in Phoenix in all locations worldwide and (2) implement a process to actively monitor transaction response times in Phoenix in all locations worldwide.

In response, by November 2005, the CFO planned to:

- Develop formal performance goals for Phoenix transaction times based on industry best standards that would apply to all missions that receive Phoenix. Once performance testing and user feedback at some of the more technically challenged missions was completed and performance goals were established, the CFO would implement worldwide performance goals.
- Implement a system to monitor Phoenix response times proactively in the overseas missions once the performance goals based on industry best standards for Phoenix transaction times were established.

In an April 2006 status report on those recommendations, the Agency reported that the CFO and CIO modified the approach in establishing and monitoring performance after upgrading Phoenix to version 6.0. The revised approach focused on bandwidth and latency as indicators of acceptable performance rather than the previous approach of measuring transaction response times. The status report also stated that the acting CIO advised that response times greater than 600 ms might affect Phoenix performance, which was consistent with the recommended standard established during the pilot deployment of Phoenix. Yet, the status for the report mentioned no established standard for bandwidth utilization.

In addition, the status report stated that performance goals based on transaction response times were not updated at that time because Phoenix was still being deployed and would need to be in steady state in order to determine the appropriate performance ranges by transaction. However, according to Agency officials, although Phoenix is in steady state, USAID has not established performance goals for transaction response time or begun to monitor against those goals.

According to Agency officials, login response time is monitored as an indicator of expected performance. However, latency and response times for login, obligations, and payments during the month of January 2007 do not support the theory that login response time is a good indicator of performance.

- Login response times for the missions reviewed ranged between 6 and 19 seconds, well below the 23–50 second performance goal established during the pilot deployment. However, the Almaty and Pretoria missions experienced high average latency measurements in the range of 600–800ms during the month, 90 percent and 23 percent of the time, respectively, despite an acceptable login response time.
- Although the Dakar and Manila missions experienced latency that on average measured in the 300–600ms range more than 80 percent of the time during the month, the total average response time to process payments was high, measuring at 286 and 290 seconds, respectively. (The Agency did not set performance goals for payments during the pilot deployment. No explanation was given for not having done so.)
- The average time for processing obligations ranged from 46 to 181 seconds, which exceeds the previously established performance goal that ranged from 31 to 54 seconds.

The information above confirms that, although login response time may be an indicator of system performance, other factors (e.g., latency, bandwidth, and transaction response times) need to be monitored to provide a more complete indication of system performance.

According to Agency officials, the performance data results are shared regularly with the Phoenix Technical Team, which is cochaired by managers from the Offices of the CFO and CIO. However, no formal management process compares actual performance results to expected performance results in order to implement corrective action to improve system performance. Instead, according to Agency officials, the lack of user complaints generally dictates acceptable performance.

In addition, USAID has a tool that is capable of generating service delivery reports that monitor the total average response times. If baseline thresholds are established, the monitoring tool is able to calculate service-level agreement violations (i.e., when response times exceed an established baseline threshold) for each mission or by region based on telecommunication capability. However, the service delivery reports are not used to monitor system performance. According to Agency officials, the current baseline threshold is set at a default value of 100ms. As a result, the reported service level agreement violations are misleading and meaningless.

**Phoenix Business Contingency Plan Incomplete** – USAID’s “Phoenix Business Contingency Plan,” dated March 24, 2006, provides a good start for dealing with slow connectivity issues. However, the plan appears to be a conceptual document and the triggering events described are broad and vague. The plan needs to be more definitive with measurable triggers and timeframes for implementation in the event of disrupted service.

For example, the triggering event for one item in the plan is described as "Consistent poor performance," for which the remedy is to purchase additional bandwidth from the local Internet service provider or Very Small Aperture Terminal, if possible. However, the plan neither defines timeframes for what constitutes "consistent" nor defines "poor performance." In addition, the plan does not provide alternative solutions for missions that are unable to purchase additional bandwidth. Further, according to Agency officials, "consistent poor performance" is generally identified by the user for actions, such as taking too long to load a page. The practice of evaluating poor performance based on the mission end users' tolerance of system performance is a reactive rather than proactive approach, which negates the purpose of establishing a performance goal.

According to the plan, an initial set of solutions were provided for missions that may have been at risk of latency problems. The solutions were based on response times tested between December 24, 2005, and January 26, 2006, a 1-month period. The plan further states that any recommendations implemented by the Phoenix team will result from a comprehensive view of the data over a period of several months, and that a final contingency plan will be developed for each mission. A viable contingency plan is especially critical for missions in the Africa region, where limited telecommunications infrastructure and inherent technical constraints are significant.

**Impact of System Performance Problems** – As a result of the system performance problems, missions work less efficiently as they try to work around the sluggish system performance. Specifically, of the users surveyed:

- 21 percent reported to work early or stayed late when performance improved.
- 21 percent performed other tasks that did not require the use of Phoenix when having difficulty gaining access. For example, during power outages—which may be daily occurrences in the Africa region—users reported that they work outside of the system using Excel spreadsheets.
- 15 percent scheduled work to minimize the number of users accessing Phoenix.
- 13 percent worked overtime to complete daily work.

Similarly, USAID's "Phoenix Overseas Deployment Project Closeout and Post-Implementation Review Report," dated October 6, 2006, (called Agency PIR) determined that:

- 35 percent reported to work early or stayed late when performance improved.
- 16 percent use several computers to process daily work.
- 12 percent worked overtime to complete daily work.
- 7 percent schedule work to minimize the number of users accessing Phoenix.

In addition, one of the Agency's tips to improve performance has the effect of the user working around the telecommunication issues—which creates an environment of a less productive staff. Specifically, that tip suggests that the missions schedule their work

around maximum usage hours, which is defined for most missions as from 10:00 a.m. to 11:30 a.m. and 2:00 p.m. to 4:00 p.m. local time. Further, the tip encourages the user to wait until there are fewer users on the system.

According to the Agency PIR, during the next several months the project team will focus on stabilizing, fine-tuning, increasing efficiency, and creating future initiatives for Phoenix in steady state. Nonetheless, this audit makes the following recommendations to help USAID meet the needs of Phoenix users' with respect to system performance.

*Recommendation No. 3: We recommend that USAID's chief financial officer, in collaboration with the chief information officer, establish meaningful performance goals most applicable to the Agency's monitoring capabilities (including but not limited to bandwidth, transaction response time, and latency) to assist Phoenix users in completing their work efficiently.*

Evaluation of Management Comments – In response to the draft report, USAID management commented that the performance goals established during the Phoenix pilot phase are current. In addition, USAID management requested that this recommendation be closed upon issuance of the report. However, USAID did not provide documentation showing that the performance goals are still valid. As such, this audit considers that management decision has been reached for Recommendation No. 3. However, Recommendation No. 3 will not be closed upon issuance of this report.

*Recommendation No. 4: We recommend that USAID's chief financial officer, in collaboration with the chief information officer, establish a process to (1) actively monitor system performance against the performance goals established from Recommendation No. 3 and (2) take corrective action when needed.*

Evaluation of Management Comments – In response to the draft report, USAID management stated that the Office of the Chief Information Officer is implementing an Enterprise Tools Tech Refresh Project. When these tools are in place, the chief financial officer will work with the chief information officer to monitor bandwidth, transaction response time, and latency. The project will monitor actual Phoenix response times for transactions. With this monitoring capability, the Office of the Chief Financial Officer will update its performance goals if necessary and then actively monitor the financial system against these newly revised goals. Funding permitting, these new monitoring tools will be in place by April 2008, and the process for monitoring system performance against performance goals will be in place by August 2008.

Based on USAID management's comments, a management decision has been reached for Recommendation No. 4.

(Note that slight wording changes from the draft report were made to clarify the intent Recommendation No. 4.)

*Recommendation No. 5: We recommend that USAID's chief financial officer, in collaboration with the chief information officer, implement the following for the Phoenix Business Contingency Plan: (1) incorporate the established performance metrics for latency and bandwidth, and (2) define contingency triggers and timeframes for triggers, solutions, and impacts.*

Evaluation of Management Comments – In response to the draft report, USAID management stated that the Phoenix Business Contingency Plan will be updated and definitions in the document will be clarified once the monitoring tool (described in the management responses to Recommendation Nos. 3 and 4) has been implemented. According to the response, the monitoring tool will allow the Office of the Chief Financial Officer to more accurately establish and define metrics, triggers, and timeframes in the Phoenix Business Contingency Plan. USAID plans to update the contingency plan by August 2008.

Based on USAID management's comments, a management decision has been reached for Recommendation No. 5.

*Recommendation No. 6: We recommend that USAID's chief information officer establish a process to ensure that volume and stress testing is performed for ongoing and future information technology projects and that the results of the tests are considered as part of the process to approve the system deployment.*

Evaluation of Management Comments – In response to the draft report, USAID management stated that the OCIO recently established a Pre-Production Lab environment. That Lab will be used to validate hardware, software, and data deployments and their operability within a simulated production environment, including the typical mission environment. USAID also plans to implement a tool that will be used to simulate user and network traffic to recreate a wide range of real-world loading scenarios. Finally, Test Readiness Reviews and Deployment Readiness Reviews will be used to ensure that volume and stress testing are performed for ongoing and future IT projects and that the results of the tests will be considered a part of the process to approve the system for deployment. USAID plans to implement this process by April 2008.

Based on USAID management's comments, a management decision has been reached for Recommendation No. 6.

## **Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to user support?**

USAID's implementation of Phoenix at selected missions met users' needs with respect to user support, except with respect to training and education for mission users.

USAID succeeded in establishing an effective communication plan to involve worldwide mission users and provide channels for user input into the deployment of Phoenix. In addition to conducting conferences with mission subject matter experts to act as liaison between mission users and the project deployment teams, throughout the regional deployments, Lesson's Learned Meetings and weekly conference calls were held to address users' concerns. The Agency also publishes a monthly newsletter (called "Phoenix Flight") to communicate with the larger worldwide community and stakeholders.

Despite USAID's effective communications plan, USAID did not provide sufficient training and education for users. The following section discusses this issue in detail.

## Training and Education for Users Needed

Summary: USAID did not fully meet mission users' training and education needs as is recommended in best practices. This problem is primarily attributed to USAID's aggressive deployment schedule and reduction in independent, onsite postdeployment support owing to budgetary constraints. As a result, USAID risks instituting inefficiencies in the mission's processes to generate reports and process transactions.

**Weaknesses in Training and Educating Users** – CoBIT 4.0, section AI4.3, "Knowledge Transfer to End Users," states that knowledge and skills to allow end users to effectively and efficiently use the application system to support business processes should be transferred to end users. The knowledge transfer should include the development of a training plan to address initial and ongoing training and skills development, training materials, user manuals, procedure manuals, online help, service desk support, key user identification, and evaluation. In addition, section DS7.1, "Identification of Education and Training Needs," states that implementation of new software should be considered in establishing and regularly updating the curriculum.

The Agency has provided mission users with training specific for performing day-to-day functional responsibilities within Phoenix. Approximately 87 percent of the users surveyed indicated that training received thus far was adequate to perform their jobs. However, users also called for improvement in training and refresher training. Specifically, 25 of the 70 (approximately 36 percent) mission user survey respondents indicate that Phoenix training needs improvement. For example:

- Users responded that training is needed primarily with reports, queries, and report generation. Other areas of training identified included but were not limited to processing vouchers and Agency codes, cashiering, and trust funds.
- Users also indicated that training was needed for system upgrades as well as job training for new hires.

In addition, 42 of the 70 (approximately 60 percent) mission users also indicated that refresher training was needed. Moreover, the Agency reported in their user support survey that all respondents identified a need for refresher training on Phoenix. Most users indicated that yearly refresher training is needed primarily on reporting and that classroom training was preferred over online training.

Mission users also expressed a need to learn more about how Phoenix operates. For example:

- Eight users described the need to have more in-depth training to understand all areas, including the General Ledger impact and improvements.
- Two users described the need to understand the workflow process.

Further, mission users recommended comprehensive training to provide a better understanding of Phoenix and continued training through standard refresher courses.

**Causes of Weaknesses Training and Education** – As discussed below, weaknesses Phoenix user education and training are primarily attributed to the aggressive deployment schedule and the reduction in independent, onsite postdeployment support owing to budgetary constraints.

**Aggressive Deployment Schedule** – The Agency’s aggressive deployment schedule was a contributing factor in the need for refresher training. Typically, training covers the basic skills that are needed to use the system correctly. USAID’s go-live training sessions included 1 week of onsite training for subject matter experts, voucher examiners, and accountants, followed by 2 weeks of onsite user support after the deployment.

Although the users indicated that the go-live training adequately prepared them to perform their daily tasks, because USAID condensed a significant amount of material in a short period of time, there was less of an opportunity for education about the system. Education goes one step further than training by showing users how the new system will help the organization function more effectively. The task of educating the end user plays an even more important role in a system deployment.

- Education demonstrates to the user how the new system and procedures can have a positive impact on the Agency and on the user’s role in it.
- Education allows users to become better decision-makers when performing daily routines, resolve problems encountered, and even reduce the incidence of costly mistakes in processing transactions.

**Reduction in Independent, Onsite Postdeployment Support Owing to Budgetary Constraints** – Following the pilot deployment, USAID modified the level of postdeployment onsite support provided to mission users owing to budget constraints. Previously, this support was performed by an independent change management team that formally obtained feedback directly from mission users through the use of onsite surveys. With the modified approach, according to Agency officials, CFO staff assumed more responsibility during the predeployment phase to (1) monitor the performance of the training conducted, (2) observe user comfort with material presented, and (3) conclude the training session to manage users’ expectations during deployment. In addition, the change management team members contacted mission users through conference calls to discuss their concerns. This new approach replaced the independent, onsite postdeployment support that was previously provided.

Under the modified approach, less detailed information was provided to help improve the overall deployment effort. For example, the Pilot Lessons Learned Report (prepared under the initial approach) included a description of the lessons learned; the recommendation; and the impact on cost, scope, schedule, and approach. Whereas, after modifying the approach, the Lessons Learned Report was reduced to a memorandum that did not necessarily include all of the lessons learned but reported only the problem area (e.g., data migration), the recommendation, and its status.

**Impact of Training and Education Weaknesses** – As a result of the training and education weaknesses, USAID runs the risk of users working less efficiently and effectively (e.g., erroneous transactions) when processing transactions through the

system and running Phoenix reports. For example, one user reported processing a transaction in error that resulted in a need to create more than 60 entries to reverse and repost correcting entries.

According to Agency officials, users enter the wrong parameters when attempting to generate Standard and Business Objects Enterprise reports. Agency officials further stated that mission users are experiencing a learning curve, which is likely to continue. However, it is questionable that the issue relates to a learning curve when mission users have resorted to developing alternative reporting tools to meet their information needs. (See the “Quality and Performance of Reports Needs Improvement” section of this report.)

Although the Agency officials feel that users were provided ample training, the training was modified halfway through the regional deployments to Asia and the Near East and Africa regions to address the specific needs of each mission and expanded into multiple sessions. Agency officials acknowledged that the modified reports training improved the mission users’ ability to generate reports and queries. Nonetheless, in an article published in the February 2007 issue of “Phoenix Flight” entitled “Continued Phoenix Training,” a contributing writer involved in the Africa I regional deployment reported that the initial training was an excellent start but that additional training was needed.

According to the article, users struggled to apply what they learned in the training provided while performing their daily tasks. Consequently, the subject matter experts were inundated with repetitive questions from multiple users, many of which were then referred to the Phoenix Regional Support Centers. To remedy the situation, the article stated, several of the missions in Africa conducted additional training to incorporate the business process, in order to meet the mission users’ needs.

Although USAID made some modifications to training to address specific users’ needs, the change occurred during the last regional deployments. Therefore, this audit makes the following recommendation.

*Recommendation No. 7: We recommend that USAID’s chief financial officer document and implement an updated plan to provide Phoenix training materials for system upgrades and continuous refresher training.*

Evaluation of Management Comments – In response to the draft report, USAID management stated that the CFO agrees with the recommendation. As such, the CFO has been and will continue to be updating the approach to provide training materials for system upgrades, new hires, and refresher training. However, USAID management noted that the ability to provide this training is severely limited owing to budgetary constraints. Therefore, information for changes to the system has been provided on an ongoing basis. In addition, new users are receiving on-the-job training and missions have cross-trained other missions.

In addition, USAID plans to review and updated the training plan with the next major upgrade to Phoenix—an update which has been postponed during the past 3 fiscal years due to budget cuts. Currently, USAID plans to begin upgrading Phoenix in FY 2009, and update that training plan by mid-FY 2009.



Based on USAID management's response, a management decision has been reached for Recommendation No. 7.

(Note that slight wording changes from the draft report were made to clarify the intent Recommendation No. 7.)

## **Did USAID's implementation of Phoenix at selected missions meet users' needs with respect to system functionality?**

USAID's implementation of Phoenix at selected missions met users' needs with respect to functionality, except for inefficiencies in processing trust funds, disbursements, and functionality for invoice tracking, prompt pay processing, and Department of Health and Human Services (DHHS) transactions.

Specifically, USAID's implementation of Phoenix at selected missions met users' needs for processing:

- Operating Expense (OE) workflow – The OE workflow provides mission users the ability to create operating expense budgets, make distributions against the budget, process Treasury and U.S. Disbursing Officer payments and create applicable budget and spending reports. Substantially all requirements in the OE workflow are configured to meet users' needs for OE processing.
- Bilateral and unilateral workflows – The bilateral workflow permits mission users to create and process program budget, purchase, and expense activity for bilateral agreements USAID enters into with foreign governments to benefit the host country. A majority of the requirements are configured to meet users need for processing unilateral program budgets, purchases, and expense activity.

However, as discussed below, USAID's implementation of Phoenix at selected missions created inefficiencies for processing trust funds and disbursements, as well as invoice tracking, prompt pay processing and DHHS transactions.

## **Inefficiencies in Processing Some Transaction Types**

Summary: USAID did not fully meet user needs to ensure that functional needs and usability were met as defined in best practices and prescribed by CoBIT 4.0. These problems occurred primarily because the system was deployed before it was ready and functional requirements documentation was not maintained. As a result, mission users were not provided the tools needed to efficiently and effectively complete some daily tasks. In addition, mission users maintained cuff records to accommodate the gaps in functionality.

**Improvement Needed for Some Workflow Configurations** – COBIT 4.0, section AI1.1, "Definition and Maintenance of Business Functional and Technical Requirements," calls for identifying, prioritizing, specifying, and agreeing on business

functional and technical requirements covering the full scope of all initiatives required to achieve the expected outcomes of the IT-enabled investment program. The section also calls for definitions of the criteria for acceptance of the requirements. Requirements should take functional needs and usability into account, among other things. Finally, a process should be established to ensure and manage the integrity, accuracy, and currency of business requirements as a basis for control of ongoing system acquisition and development.

In addition, section A12.7, “Development of Application Software,” provides guidance on software development (or, in this case, acquisition of a commercial off-the-shelf product). That section puts an emphasis on ensuring that automated functionality is developed in accordance with design specifications, development and documentation standards, and quality requirements. The guidance calls for approval and sign-off on each key stage of the application software development process following successful completion of functionality, performance, and quality reviews. Issues to be considered include approval of design specifications that meet business, functional, and technical requirements.

Finally, section A12.9, “Applications Requirements Management,” states that during design, development, and implementation the status of individual requirements (including all rejected requirements) should be tracked and changes to requirements should be approved through an established change management process.

Although, Phoenix met many of the users’ needs, there were many shortcomings in how Phoenix was configured to accommodate workflows for trust funds, automated disbursements/reconciliation, and DHHS and Accrual Reporting System Interface subsystems. Some examples of functionality shortcomings are discussed below:

- **Automated Disbursements/Reconciliation and DHHS Workflow** – This workflow includes the process of payment selection, scheduling, and payment generation and processing for funds disbursed through the U.S. Treasury, the United States Disbursing Office, and local banks. In addition, this workflow includes the process for payment processing, confirmation, and reconciliation. The integrated test scenario for the disbursements workflow includes requirements for the automated disbursements and interface systems for DHHS activity and the Accrual Reporting System.

However, mission users found cash reconciliation more difficult in Phoenix than in the previous accounting system, Mission Accounting Control System. According to mission users, the U-101 Report<sup>9</sup> provided the necessary totals that facilitated the reconciliation process. However, there is no such report in Phoenix. As such, users are not sure of the accuracy of the reconciliation and are concerned that errors might go unnoticed.

Similarly, USAID’s OMB A-123 Task Force found that the lack of a U-101 type report to assist in the reconciliation process is a deficiency. The Task Force recommended that a report similar to the U-101 be developed for use in the reconciliation process. According to the A-123 write-up, a monthly Mission Consolidated Report was

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<sup>9</sup> The U-101 Report was from the Mission Accounting and Control System.

proposed as an alternative reporting tool in place of the U-101 to enhance mission internal controls needed to monitor, detect, and prevent errors and misstatements at the mission level.

- **Prompt Pay Functionality** – According to Agency officials, mission users opted to process payments as imprest funds rather than itemized payments to manage the number of steps required to process payments in Phoenix. However, the functionality for prompt payment does not exist when processing imprest funds. Therefore, mission users manually calculate prompt payment outside of Phoenix to ensure compliance with the Prompt Payment Act. This workaround increases the risk of missed due dates and avoidable interest payments.
- **Invoice Tracking** – Phoenix tracks invoices that are processed through the system but not all incoming vouchers. As such, many mission users indicated that a separate log is maintained to track the invoice number and receipt date for unprocessed documents. This problem is particularly critical given the high number of payments made by USAID.
- **Trust Fund Workflow** – The trust fund workflow provides mission users with the functional requirements to establish and use local currency trust funds. The integrated test scenario for the trust fund workflow includes requirements for the Budget Execution, Planning, Purchasing, Accounts Payable, Accounts Receivable, and the Queries and Reports Momentum modules.

Although only one mission that processed trust funds was surveyed, users identified concerns with some requirements in the trust fund workflow process. For example, users indicated they received an error when posting trust fund allotments. In addition, mission users were concerned with their inability to deobligate funds from a local OE trust fund. Further, the Phoenix user responsible for trust funds indicated that cuff records were maintained to track reporting activity for foreign currency transactions for local trust funds. The error in posting allotments and the inability to deobligate funds occurred because fund maintenance tables were incorrectly setup and balances in Phoenix reports were incorrect.

Although the mission user in our sample attributed the erroneous data to the data migrated from Mission Accounting and Control System to Phoenix, the issue is further complicated by mission users' reluctance to enter foreign currency transactions into Phoenix. Specifically, OIG financial statement auditors found that mission users were not entering their foreign currency transactions in Phoenix because staff members did not believe that the system was working properly.

In addition to the effects discussed above, approximately 56 percent of users responded that they have developed other manual or computerized systems (e.g., spreadsheets, cuff records) to record accounting, financial, or other information to meet business needs since Phoenix was deployed.

**Causes for Needed Workflow Configuration Improvements** – As discussed below, USAID experienced functionality shortcomings primarily because the system was deployed before it was ready and functional requirements documentation was not maintained.

**System Deployed Before Ready** - In its February 2006 report,<sup>10</sup> OIG reported that USAID accepted and authorized moving forward with the software upgrade despite the fact that (1) system and regression testing resulted in numerous open test incident reports,<sup>11</sup> (2) some significant functionality was deferred for future releases of the software, and (3) certain reporting functionality was not system tested. The POD team's "deploy and fix" methodology became evident shortly after the upgrade. Specifically, immediately after going live with the software upgrade, the POD team prepared urgent change requests to implement 32 needed changes affecting several functional areas, including but not limited to automated disbursements, accounts payable, and credit cards.

In the February 2006 report, OIG recommended that USAID develop its policies and procedures for each phase and activity of the Agency's project lifecycle, including performance metrics and measures. The report found that USAID did not establish policies and procedures for developing user requirements and identifying the required inputs or outputs to move to the next phase of the project. In response to the report, USAID agreed to coordinate the development of USAID's IT Project Management Control Manual, which will describe the policies and procedures for each phase and activity of the Agency's information technology (IT) project lifecycle. As of the last day of fieldwork for this audit, final corrective action was not taken on that recommendation.

**Functional Requirements Documentation Not Maintained** – When Phoenix was initially deployed in Washington, the initial requirements were developed in the Letter of Intent, which was established for functionality within Momentum version 3.74. However, according to Agency officials, documentation was not maintained to identify which functional requirements were excluded and/or revised. Moreover, according to Agency officials, USAID did not maintain documentation of which requirements were met and which were not met.

USAID's "Phoenix Overseas Deployment Project Closeout and Post-Implementation Review Report," dated October 6, 2006, stated that during the next several months the project team will focus on stabilizing, fine-tuning, increasing efficiency, and creating future initiatives for Phoenix in the steady state. Therefore, this audit will not make any specific recommendations with respect to Phoenix functionality. However, USAID needs to address requirements traceability in its policies and procedures to prevent similar functional shortcomings in future IT projects. Therefore, this audit the following recommendation:

*Recommendation No. 8: We recommend that USAID's chief information officer establish a process to (1) ensure that all mandatory requirements are met for ongoing and future information technology projects and (2) when applicable, document the reasons that requirements are no longer considered to be mandatory.*

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<sup>10</sup> Audit of USAID's Information Technology Governance over Its Phoenix Overseas Deployment and Procurement System Improvement Program Projects (Report No. A-000-06-001-P, February 21, 2006)

<sup>11</sup> The test incident reports were used to document, track, and resolve problems identified during test execution.

Evaluation of Management Comments – In response to the draft report, USAID management stated that the Office of the Chief Information Officer is developing an IT Governance Manual. That manual will address standard policies, processes, and procedures to be followed by all Agency IT projects, including a requirement for the traceability and management of requirements. (In addition, USAID's Automated Directives System will be updated to support those governance practices.) The manual is expected to be completed by January 2008.

Based on USAID management's comments, a management decision has been reached for Recommendation No. 8.

# EVALUATION OF MANAGEMENT COMMENTS

USAID's chief financial and information officers prepared a consolidated written response to our draft report. The consolidated response is included in its entirety in Appendix II of this report.

In their response, USAID agreed to take corrective action on all eight recommendations. However, USAID management commented that many of the recommendations are dependent on budget resource availability. A summary of USAID's comments and our evaluation follows each recommendation in the body of the report.

Based on USAID's response to the draft report, a management decision has been reached on Recommendation Nos. 1, 2, 3, 4, 5, 6, 7, and 8.

# SCOPE AND METHODOLOGY

## Scope

The Office of the Inspector General, Information Technology and Special Audits Division, with assistance from the Regional Inspector General offices in Cairo, Dakar, Frankfurt, Manila, San Salvador, and Pretoria, conducted this audit in accordance with generally accepted government auditing standards. In lieu of performing a full post-implementation review of the Phoenix Overseas Deployment (POD) project, we limited our audit scope to determine whether the deployment of Phoenix in mission field locations fulfills users' needs with respect to reporting, user support, system performance, and system functionality.

Audit fieldwork was conducted from January 11, 2006, through May 22, 2007. For Phase 1 of this audit (discussed in the "Methodology" section), we interviewed approximately 100 (or 12 percent) of 832 Phoenix users at 7 (or approximately 14 percent) of the 51 Phoenix locations. In Senegal and South Africa, we surveyed the users about system performance only. The following table shows the number of users interviewed at each mission:

<b>USAID Mission</b>	<b>No. of Users</b>
USAID/West Bank	16
USAID/Philippines	13
USAID/Jamaica	14
USAID/Kazakhstan	19
USAID/Georgia <sup>12</sup>	11
USAID/Senegal <sup>13</sup>	11
USAID/South Africa <sup>13</sup>	<u>16</u>
Total No. Users Interviewed	100

Phase 2 of this audit (discussed in the "Methodology" section), was conducted at USAID headquarters in Washington, DC.

## Methodology

To plan this audit, we obtained an understanding of USAID's POD Project, which included reviews of the following components:

- POD project documentation.
- USAID's 2005 Administrator Employee Survey results for financial and information services.

<sup>12</sup> USAID/Georgia was the pilot mission for this audit. As such, some questions posed to users were slightly different than questions to users at the remaining missions.

<sup>13</sup> Users were surveyed regarding system performance only.

- Related audit reports: (1) *Audit of USAID's Information Technology Governance over Its Phoenix Overseas Deployment and Procurement System Improvement Program Projects* (Report No. A-000-06-001-P), (2) *Audit of USAID's Information Technology Infrastructure* (Report No. A-000-05-006-P), and (3) *Report on the Audit of USAID's Financial Statements for Fiscal Years 2006 and 2005*.
- Chief Financial Officer's Council "Implementation Guide for OMB Circular No. A-123, Management's Responsibility for Internal Control, Appendix A, Internal Control over Financial Reporting" (July 2005).
- Agency responses to our preaudit questionnaire.

Audit fieldwork was conducted in two phases. During phase 1, we conducted high-level structured interviews to (1) assess mission users' experiences in using Phoenix and (2) determine whether Phoenix, as implemented, met users' needs in four key areas: functionality, system performance, reporting, and user support.

During phase 2, we conducted interviews with responsible Agency officials in USAID's Bureau for Management to follow up on users' concerns. Specifically, follow-up interviews were conducted with officials in the Offices of the Chief Information Officer and Chief Financial Officer.

The following sections describe in detail the methodology followed and, when needed, the materiality thresholds set to answer each of the audit objectives.

**Reporting** – We defined mission users' needs with respect to reporting as a user's ability to generate timely, accurate, and complete reporting information. To answer the audit objective, we conducted interviews and evaluated the reporting requirements process.

**System Performance** – We defined users' needs with respect to system performance by establishing the following criteria for processes and activities:

- Formal performance goals for transaction response times were developed and implemented.
- A process was in place to actively monitor transaction response times in Phoenix in all locations worldwide.
- A viable Phoenix contingency plan for slow network connectivity was developed, tested, and implemented.
- Response times permitted the user to complete assigned work timely<sup>14</sup> and efficiently.<sup>15</sup>
- The methods and techniques used to monitor transaction processing times provided the basis for corrective action to address poor telecommunications and promote acceptable performance.

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<sup>14</sup> Timely: Completing assigned tasks timely within normal business hours.

<sup>15</sup> Efficiently: Performing tasks in an organized and capable way without waste.



To answer the audit objective, we conducted interviews and analyzed the system performance and monitoring reports to determine the quality of interconnectivity between USAID/Washington and selected overseas missions based on (1) network latency and (2) response times. Our analysis included selected system network performance results collected over a 1-month period.

**User Support** – We defined users’ needs with respect to user support by evaluating the following criteria:

- Channels for user input into the deployment process.
- Adequate training for users.
- Timely problem resolution.

To answer the audit objective, we conducted interviews and evaluated the service level provided through the Phoenix Regional Support Centers and USAID/Washington Helpdesk.

**Functionality** – We defined mission users’ needs with respect to functionality as “Phoenix functioning in accordance with USAID missions’ accounting workflow.” (We did not perform tests to validate the Phoenix functional requirements.)

To answer the audit objective, we evaluated users’ responses to questions regarding each workflow and underlying requirement to determine whether each scenario requirement was (1) met, (2) not met, or (3) met with exception. Using that information, we calculated the overall percentage of requirements met, not met, or met with exception for each workflow. To answer the audit objective related to functionality, we used the following criteria:

- If 80 percent or more of the aggregate workflow scenarios were met, we concluded that the underlying requirements were met.
- If less than 80 percent but greater than or equal to 65 percent of the aggregate workflow scenarios were met, we concluded that the requirement was met with exceptions.
- If less than 65 percent of the aggregate workflow scenarios were met, we concluded that the requirement was not met.

We reviewed the Phoenix functional requirements, independent system test plans, and the Functional Team Charter. In addition, we reviewed and relied on some work performed during the audit of USAID’s Information Technology Governance over its Phoenix Overseas Deployment and Procurement System Improvement Program Projects (Report No. A-000-06-001-P).

# MANAGEMENT COMMENTS

December 11, 2007

## MEMORANDUM

**TO:** Director IG/A/ITSA, Melinda G. Dempsey

**FROM:** Chief Financial Officer, David D. Ostermeyer  
Chief Information Officer, David C. Anewalt

**SUBJECT:** Management Response to Draft Report on Phoenix Post Implementation Audit of USAID Mission Users' Needs (Audit Report No. A-000-08-XXX-P), October 4, 2007.

Thank you for the opportunity to respond to the draft audit report. This memorandum contains the management decisions for the Draft Report on Phoenix Post Implementation Audit of USAID Mission Users' Needs.

The scope of this audit was to determine whether USAID deployed its core financial system, Phoenix, to mission field locations in a manner that fulfilled the users' needs with respect to system functionality, system performance, reporting and user support. Through this audit process, the Inspector General concluded that:

- USAID's implementation of Phoenix at select missions met users' needs with respect to reporting, except that the quality of information and the ability to create reports needs improvement;
- USAID's implementation of Phoenix at select missions met user's needs with respect to system performance, except for some mission users' ability to work efficiently due to unstable system performance;
- USAID's implementation of Phoenix at select missions met users' needs with respect to user support, except with respect to training and education for mission users; and
- USAID's implementation of Phoenix at select missions met users' needs with respect to functionality, except for inefficiencies in processing trust funds, disbursements, and functionality for invoice tracking, prompt pay processing, and the Department of Health and Human Services (DHHS) transactions.

The Office of the CFO appreciates that the OIG devoted much time and effort to the completion of the Phoenix Post-Implementation Review Audit and report. It is important to note that there are recommendations and findings assigned to the Office of the CFO that are outside of the scope of the Phoenix system and/or the Office of the CFO. The specific instances are discussed in detail below. The Office of the CFO also highlights that while specific recommendations recognize budget constraints, many of the other recommendations are also dependent upon budgetary resource availability.

### **Recommendation No. 1**

*We recommend that USAID's Chief Financial Officer conduct an analysis of outstanding reporting issues and requests from Phoenix users' to assess the overall Phoenix users' information needs. At a minimum, this should include preparing and implementing a detailed plan with timeframes to (1) fully document mission users' specific reporting needs, (2) eliminate reporting gaps in information provided from Phoenix, (3) eliminate unneeded reports supported by the Agency and (4) use mission-developed reports to the extent possible.*

### **Management Response 1**

The Office of the CFO (OCFO) concurs with this recommendation. In the past, users' specific reporting needs have been documented by OCFO. For example, a reports analysis has been conducted on several occasions. These occasions include:

- Washington Summit in 2003
- Controller Conference Cairo in 2006
- Developing detailed go-live requirements
- Analyzing help desk reports tickets

Moving forward, in an effort to more comprehensively address Phoenix reporting needs by mission users and to address points one and two, OCFO is developing a plan to continue to analyze outstanding reporting issues. There was a reporting session to discuss reports topics at the Controllers Conference in November 2007. Resulting from the conference was the establishment of a Reports Working Group, which is comprised of Phoenix Team members and Phoenix users. The purpose of the group is to incorporate user suggestions, prioritize issues, review enhancements, and improve transparency in the reports development process. This working group will be established and formalized by February 29, 2008, and will work throughout the fiscal year to more thoroughly discuss and document mission reporting needs and address gaps in current reporting information provided by Phoenix. Output of this process will be documented on a quarterly basis as an input into the reports development process and planning for the quarterly Phoenix reports releases.

The OCIO provides OCFO with a report that details Phoenix reporting statistics on items including daily usage, production time, usage frequency, etc. This information will supplement the Reports Working Group's efforts to proactively identify gaps in reporting. OCFO also continues to develop and release reports on a quarterly basis. OCFO is planning to review and eliminate reports that are no longer used by the Agency by June 30, 2008.

If OCFO is to leverage any mission-developed reports, internal testing, development, and training, would be required. Please note that FY08 budget constraints do not give OCFO the flexibility to assess all of the reporting demands nor all mission-developed reports at this time but will continue to assess mission-developed reports through September 30, 2008, as resources permit.

### **Recommendation No. 2**

*We recommend that USAID's Chief Financial Officer develop and implement a process to proactively monitor and address slow response times for generating Business Objects Enterprise reports.*

### **Management Response 2**

The Data Management (DM) Division of the Office of the CIO periodically runs a Crystal Reports durations report that shows the time taken to run reports during a defined time period. This report is regularly shared with members of the Phoenix Reporting Team. For instances in which this report identifies reports that take more than five minutes to run, the Phoenix change management team is notified for user follow-up. Most cases involve users entering parameters with selection criteria which caused the selection of massive amounts of data. When a particular report is noticed to take a long time to run on a frequent basis, the report is referred to the report writers for further investigation. OCFO will begin monitoring these reports daily. This process will be formalized by February 29, 2008.

Furthermore, some of the causes of slow response times, such as the wild card flexibility, can

only be addressed through technical upgrades, which is also dependent on funding. The planned Operational Data Storage (ODS) could address additional functionalities, based upon contention, though its availability is contingent upon GLAS, of which it is currently a component. Thus, only after GLAS has successfully implemented this concept can ODS begin to interface with Phoenix and potentially alleviate the slow response times.

### **Recommendation No. 3**

*We recommend that USAID's Chief Financial Officer, in collaboration with the Chief Information Officer, establish meaningful performance goals most applicable to the Agency's monitoring capabilities (including—but not limited to—bandwidth, transaction response time, and latency) to assist Phoenix users in completing their work efficiently*

### **Management Response 3**

The Office of the CFO established meaningful performance goals during the Phoenix pilot phase, and these performance goals are current and accepted today. These goals were used to close a 2006 IG Infrastructure audit. (Documentation will be provided to ITSA separately.)

Because there are performance goals in place, the Office of the CFO requests that this recommendation be closed upon issuance of the final report. We will address performance monitoring, including updating the performance goals, in the management response to Recommendation 4.

### **Recommendation No. 4**

*We recommend that USAID's Chief Financial Officer, in collaboration with the Chief Information Officer, establish a process to (1) actively monitor system performance against the performance goals established from Recommendation No. 3 and (2) take corrective action, when needed.*

### **Management Response 4**

OCFO lost its system performance monitoring capabilities when the Agency took down the Marimba tracking tool. Currently, the Business Infrastructure Engineering (BIE) Division of the Office of the CIO is implementing an Enterprise Tools Tech Refresh Project. When these tools are in place, the CFO will work with the CIO to monitor bandwidth, transaction response time, and latency. Included would be actual Phoenix response times for transactions such as Advance, AR, Budget Allocation, Obligations, Payments, and Commitments. With this monitoring capability, OCFO will update its performance goals if necessary, and then actively monitor the financial system against these newly revised goals.

CIO/BIE is also working to provide detailed performance information for Phoenix such as the synthetic TCP/HTTPS availability and connect times from Phoenix missions to the Phoenix web front end server in Charleston. CIO/BIE will also provide general mission/Washington availability and latency information. Further, CIO/BIE will work with OCFO to establish appropriate alert mechanisms for Phoenix performance metrics.

Funding permitting, these new monitoring tools will be in place by April 2008. The process for monitoring system performance against performance goals will be in place in August 2008.

### **Recommendation No. 5**

*We recommend that USAID's Chief Financial Officer, in collaboration with the Chief Information Officer, implement the following for the Phoenix Business Contingency Plan: (1) incorporate the established performance metrics for latency and bandwidth and (2) define contingency triggers and timeframes for triggers, solutions and impacts.*

### **Management Response 5**

The Phoenix Business Contingency Plan will be updated and definitions in the document will be

clarified once the monitoring tool described in the management responses above has been implemented. This monitoring tool will allow OCFO to more accurately establish and define metrics, triggers, and timeframes in the Phoenix Business Contingency Plan.

Updates to the Contingency Plan will occur following the monitoring tool's deployment in April 2008. The target date for the updated contingency plan is August 2008.

**Recommendation No. 6**

*We recommend that USAID's Chief Information Officer establish a process to ensure that volume and stress testing is performed for on-going and future information technology projects and that the results of the tests are considered as part of the process to approve the system deployment.*

**Management Response 6**

The Office of the Chief Information Officer has recently established a Pre-Production Lab (PPL) environment which will be used to validate hardware, software and data deployments, and their operability within a simulated production environment. This simulated environment includes the typical Mission environment, as well as simulation of USAID's Wide Area Network connectivity methods. The Enterprise Tools Tech Refresh Project will install and configure a monitoring solution in the PPL similar to that of the operational network's capabilities for network monitoring and application transaction monitoring capabilities by April 2008.

As part of the Enterprise Tools project, the Spirent Avalanche Load Testing Appliance will be installed in the PPL. This device can generate large quantities of simulated user and network traffic to recreate a wide range of real-world loading scenarios. Test Readiness Reviews and Deployment Readiness Reviews will be used to ensure that volume and stress testing in the PPL is performed for ongoing and future information technology projects and that the results of the tests are considered as part of the process to approve the system deployment.

When the monitoring capabilities are established in the PPL by April 2008, performance and stress testing in this environment will be implemented for all systems in development. Results from these tests will be considered as part of the process to approve the system deployment.

**Recommendation No. 7**

*We recommend that USAID's Chief Financial Officer document and implement an updated plan to provide Phoenix training materials for system upgrades and continuous refresher training.*

**Management Response 7**

The Office of the CFO concurs with this recommendation and has been, and will continue to be, updating the approach to provide training materials for system upgrades, new hires, and refresher training. However, please note that the ability to provide this training is severely limited due to budgetary restraints. CFO/FS has been providing release notes, Flashes, and updated procedures for changes to the system on an on-going basis. New hires are receiving on-the-job training in USAID/W and the missions. Additionally, missions have cross-trained other missions, which supports "ownership" of Phoenix in the field and is a concept the CFO endorses.

OCFO will review and update the training plan with the next major upgrade (Phoenix 6.2). The planned Phoenix 6.2 upgrade has been postponed during the past three fiscal years due to budget cuts. Updating the training plan is contingent upon funding for Phoenix 6.2 upgrade, which is tentatively scheduled for Fiscal Year 2009. If funding is granted and work on the upgrade begins in Fiscal Year 2009, the updated training plan will be completed by mid-Fiscal Year 2009.

**Recommendation No. 8**

*We recommend that USAID's Chief Information Officer establish a process to (1) ensure all mandatory requirements are met for on-going and future information technology projects and (2) when applicable, document the reasons that requirements are no longer considered to be*

*mandatory.*

**Management Response 8**

The Chief Engineer Division of the Office of the CIO is developing an IT Governance Manual which is due to be completed by January 2008. This document will address standard policies, processes, and procedures expected to be followed by all Agency IT Projects. Additionally, ADS Policies will be updated to support these governance practices and our Earned Value Management System (EVMS) practices. Traceability and management of requirements are both key system development concepts that all projects will be expected to implement correctly. The IT Governance Manual will include a requirement for the traceability and management of requirements.

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