SPECIAL AUDIT REPORT

OF THE

ALBUQUERQUE POLICE DEPARTMENT

AND

ALBUQUERQUE FIRE DEPARTMENT

SYSTEM PROCUREMENT AND INTEGRATION PROJECT

REPORT NO. 02-133

City of Albuquerque
Office of Internal Audit and Investigations

City of Albuquerque
Office of Internal Audit and Investigations
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 28, 2005

Accountability in Government Oversight Committee
City of Albuquerque
Albuquerque, New Mexico 87102

Audit: Albuquerque Police Department
    Albuquerque Fire Department
    System Procurement and Integration Project
    02-133

FINAL

INTRODUCTION

The Office of Internal Audit and Investigations (OIAI) conducted an audit of the Albuquerque Police Department (APD) and Albuquerque Fire Department (AFD) System Procurement and Integration Project. A system integration project is the progressive assembling of system components into the whole system. In 2001/2002, the City Council directed APD, AFD, and Emergency Medical Services to operate on the same Computer Aided Dispatch (CAD) system. At that time both APD and AFD utilized two systems on separate servers using separate software. This audit was requested by the City Council.

The following are definitions to give the reader a better understanding of terms used in this report:

Computer Aided Dispatch (CAD) systems provide dispatchers and response units with real-time information on public safety incidents. These public safety systems typically track data on assignments to response units, locations of crashes, equipment locations and statuses, utility locations, and special hazards.

Records Management Systems (RMS) captures, maintains, and provides access to records over time.

An integrated system is one system with common components, such as CAD and RMS functions.

An <u>interfaced system</u> is two separate systems from different vendors in which a link exists so information can be passed back and forth between the two systems.

A <u>platform</u> defines how a computer is operated and determines what other kinds of software can be used with the system(s).

A <u>strategic information technology plan</u> is plan that guides policy and resource allocation decisions for developing, purchasing, allocating, implementing, and maintaining technology.

<u>Albuquerque Police Department</u>

In September 1988 APD purchased a records management system (RMS). The system was installed in November 1991 for traffic accident reports. The system became operational for incident case (non-traffic related) reports in March 1992. In 1997 APD purchased a computer aided dispatch (CAD) system. The CAD system was used by both APD and AFD. No records management or reporting tools were included with the initial purchase. Furthermore, the ability to download information from the CAD system did not exist since APD was unable to interface with the AS/400 (Application System/400 – A series of mid-sized computers from IBM). An interface of the two systems would enable data to be directly transferred from the CAD to the RMS and provide useful information that would assist APD management with problem identification and resource allocation. In addition, the CAD system produces reports with information in a format that is not useful to APD. During the late 1990s the APD chief, at that time, was concerned that the RMS and CAD systems were not integrated and APD was unable to interface the systems. Therefore, only limited data was being moved manually between the two systems. Information transferred from CAD to RMS is only 80-percent accurate. This is due to the difficulty of transferring data between the two systems since they are on two different platforms. Thus began the start of the CAD/RMS integration project. APD has a plan to purchase $38 million of Information Technology over a 5-year period which consists of the following:

Initiative 1: Comprehensive Information System	$9,677,077.16
Initiative 2: Interfaces to Automate All APD Processes	75,000.00
Initiative 3: APD Community Interaction	50,000.00
Initiative 4: Decision Support Technology	75,000.00
Initiative 5: Hardware Updates	19,866,456.67
Total	$29,743,533.83

<u>Albuquerque Fire Department</u>

The State of New Mexico requires AFD to report data compliant with the National Fire Incident Reporting System (NFIRS). AFD receives an annual State Fire Fund distribution of over $1 million from the State of New Mexico Fire Marshal's Office (Fire Marshal). These funds are contingent upon AFD reporting NFIRS data to the State. The Fire Marshal waived the requirement for several years since AFD did not have a functional RMS to report NFIRS-

compliant data. AFD was aware that the waiver would soon be discontinued, and began researching RMSs in fiscal year (FY) 1999. AFD put together an internal committee that included field officers. The presence of field officers on the committee helped to ensure that the system selected met their needs. The committee established four factors that were required for a new RMS to be considered. AFD chose not to use the same RMS as APD since it would have to be customized to meet its needs. A customized system can become very expensive over time. AFD purchased a RMS in early FY 2003, which was successfully implemented in June 2003 at an overall cost of approximately $400,000. AFD is now able to meet NFIRS requirements. The RMS is able to generate reports that are useful to AFD. The RMS implemented by AFD successfully meets the Department's needs. Therefore, there are no findings in this report related to AFD.

AUDIT OBJECTIVES

The objectives of our audit were to determine:

- Was there a coordination of efforts between APD and AFD to ensure that the CAD/RMS needs of both departments were met?

- Was planning, such as determining the needs of the users, involved in each Information Technology (IT) acquisition?

- Was there compliance with City and Departmental policies, procedures, and ordinances in relation to the purchase of an IT system?

- Was there compliance with state statutes and federal regulations in relation to the purchase of an IT system?

SCOPE

Our audit did not include an examination of all the functions, system procurement and integration activities of APD and AFD. Our audit test work was limited to project management activities from June 2002 thru June 2005.

This report and its conclusions are based on information taken from a sample of transactions and do not purport to represent an examination of all related transactions and activities. The audit report is based on our examination of activities through the completion date of our fieldwork, and it does not reflect events after that date.

The audit was conducted in accordance with Government Auditing Standards, except Standard 3.49, requiring an external quality control review. The audit was also conducted in accordance with Control Objectives for Information and related Technology (COBIT) Audit Guidelines, of

the IT Governance Institute. These guidelines enable the auditor to review specific Information Technology (IT) processes against COBIT's recommended Control Objectives to help assure management where controls are sufficient. These guidelines also advise management where processes need to be improved.

METHODOLOGY

We interviewed key personnel and reviewed project management documentation for the following: 1) APD alarm billing module and revenue collected from FY1993 through 2004, 2) APD's IT Strategic Plan, 3) APD's and AFD's methods for system implementation, 3)APD's IT organizational structure, and 4) Funding available for this project. This audit and its conclusions are based on information provided through interviews and review of project activities.

FINDINGS

The following findings concern areas that we believe could be improved by the implementation of the related recommendations.

1.   APD MANAGEMENT SHOULD HAVE CONTROLS IN PLACE TO ENSURE THAT ALL REVENUE IS BILLED.

When the RMS alarm module stopped working in 1998 APD was not able to bill false alarm violators until the end of fiscal year ended June 2003 when APD implemented the CryWolf alarm billing system. The loss of this revenue to the city was a result of turnover of system administrators and personnel within the APD Records Division during this period.

The City's Alarm Ordinance, Section 9-3-11 ROA states,

> "(A) The False Alarm Reduction Unit shall: (3) Send the initial billing for all permits and annual renewals of same, as well as False Alarm service fees and applicable fines."

APD Records Division did not ensure that City Ordinance Section 9-3-11 ROA was enforced causing a loss of City revenue.

RECOMMENDATION

APD management should have controls in place to ensure that all revenue billing for which it is responsible is processed on a timely basis.

APD should have the management controls in place to ensure that if a software system crashes or fails, proper support is obtained through either outside contractual support services or internal support services.

EXECUTIVE RESPONSE FROM APD

"When the RMS alarm module stopped working in 1998, APD was left with no choice but to replace the antiquated and unsupported system. As a result, the Cry Wolf billing and tracking software system was ultimately implemented in late FY/03.

APD agrees that proper support should be in place for all software systems. Contractual support services have been obtained and have been in place since the implementation of the Cry Wolf system."

2.   THE DEPARTMENT OF MUNICIPAL DEVELOPMENT (DMD) AND APD SHOULD FOLLOW CITY POLICIES WHEN SPENDING GENERAL OBLIGATION (G.O.) BOND FUNDS.

   A.   APD Should Obtain City Council Approval Prior To Spending G.O. Bond Funds Outside The Scope Of A Project.

Council Bill No. R-01-350 was approved by City Council for APD to purchase a "Message Switch & Mobile Data Computer Application" with $1.5 million of G. O. bond money. According to APD the Message Switch & Mobile Data Computer Application would "establish the necessary infrastructure to support current and future APD mobile computing needs." In March 2003, APD spent $705,304 of this G.O. bond money to replace its CAD. This was outside the scope of the project that the City Council approved.

APD still plans to purchase an integrated CAD/RMS system in the future. The estimated cost is expected to be around $8 million. This $8 million is part of the estimated $38 million 5-year IT Strategic Plan.

On February 7, 2005, City Council approved Council Bill No. R-04-191 which included a request by APD to expand the scope of the Message Switch/Mobile Data project. This was done after the $705,304 was spent to replace the current CAD system. The request stated, "The scope is hereby expanded to include the purchase of necessary software, hardware and automation equipment to upgrade technological capabilities." APD spent G.O. bond funds prior to obtaining approval to expand the scope of the Message Switch project.

B.   Capital Implementation Program (CIP) Personnel Should Give Written Approval.

DMD/CIP personnel verbally approved APD's requests to use G.O. bond funds for purchases outside the scope of the project. APD wanted to use the funds to upgrade its CAD system. As management felt that due to computer technology advances the Message Switch/Mobile Data Computer Application was obsolete. The CAD system did not fall under the scope of the Message Switch project. In February 2003 there was a meeting between CIP, APD, and DFAS/ISD to review the scope of the Message Switch project. After the scope was reviewed, CIP determined that APD could use the funds to upgrade the current CAD system. In March 2003, APD used a portion of the $1.5 million G.O. bond money to upgrade the CAD system at a cost of $705,304. CIP stated that there was no written documentation to support the decision, everything was verbal.

RECOMMENDATION

APD should obtain City Council approval prior to spending G.O. bond funds for projects outside of the initial project scope.

DMD should ensure that CIP personnel document all interpretations when a department questions whether a proposed expenditure falls within the scope of G.O. bond funded projects.

EXECUTIVE RESPONSE FROM APD

"APD believes that it has complied with all legal requirements for spending G. O. Bond funds. APD did not change the scope of the "Message Switch" bond issue and all programmatic and fiscal activity was done with the advice and consent of the City's Capital Improvement Program Division."

EXECUTIVE RESPONSE FROM DMD

DMD concurs with the recommendation and has taken corrective action. DMD no longer provides verbal authorization for expenditure of capital funds. DMD/Fiscal staff review all requests for purchases that utilize capital funds. As part of their review process, they check for both fund availability and project scope compliance. Written approval is provided on the purchase requisition before it is submitted to the DFAS/Purchasing Division. On February 6, 2004, the DMD and DFAS directors jointly issued an instruction memo to all department directors and fiscal managers which outlined these revised procedures."

3. APD MANAGEMENT SHOULD ENSURE THAT APD SUPPORT/TECHNICAL
    SERVICES DOCUMENTS A NEEDS ASSESSMENT PRIOR TO EMBARKING ON
    A PROJECT.

    A. Interim CAD System Replacement

    A needs assessment is a systematic exploration of the way things are and the way things
    should be. A needs assessment is a means by which an individual or a group can begin to
    anticipate and plan for the technical, human, time, and financial resources that are going
    to be required in the successful implementation of a project.

    Prior to the system integration project, a decision was made to upgrade the current CAD
    system at a cost of $705,304. A review of the purchase documentation by Internal Audit
    indicated that this upgrade was actually a system replacement. However, a needs
    assessment was never done for the upgrade. We inquired as to why this amount of
    money was spent to upgrade a portion prior to replacing the entire system. A member of
    the Project Management Team stated, "No one on the project team realized that the CAD
    upgrade would cost so much."

    B. Needs Assessment Not Documented

    APD personnel stated that they performed an informal needs assessment for the
    CAD/RMS project, but this process was not documented. If a needs assessment is not
    completed during the initial stages of a project, the wrong solution may be implemented.
    For example, APD is in the process of trying to integrate the CAD and RMS system at a
    cost of $38 million. However, since APD has not documented a needs assessment, they
    may be implementing an incomplete solution.

    Control Objectives for Information and related Technology (COBIT) – Acquisition &
    Implementation AI1 – Definition of Information Requirements AI1.1 states the
    following:

    "An adequate definition of information requirements in line with the control practices
    will:
    - Avoid the selection of automated solutions that do not satisfy the business
      information requirements.
    - Ensure all information requirements are implemented.
    - Guarantee that a complete and accurate set of information requirements is
      available before development or acquisition begins.
    - Allow the efficient management of the information requirements."

If APD is able to make large IT purchases without documenting the process and results of a needs assessment, valuable time and resources may not be used efficiently.

RECOMMENDATION

APD management should ensure that APD Support/Technical Services documents the process and results of a needs assessment prior to embarking on a project.

EXECUTIVE RESPONSE FROM APD

"APD respectfully disagrees with this finding and believes that they assiduously followed the technical guidance provided by the U.S. Department of Justice (DOJ) for public safety IT projects. While the needs assessment for this project may not have been documented in a manner preferred by Internal Audit, APD did, in fact, conduct a needs assessment that is viewed by other agencies, vendors, and industry consultants as resulting in one of the most comprehensive list of end-user requirements seen among law enforcement agencies.

"The DOJ has found that law enforcement agencies tend to be ill-prepared to implement large-scale information technology projects similar to the one in which APD is involved. Rather than continuing to fund failed IT projects, the Department of Justice published The Law Enforcement Tech Guide: How to plan, purchase and manage technology (successfully!) (Tech Guide). The APD project manager received a copy of this guide at one of the DOJ Technical Assistance conferences she attended at the beginning of the project, and has followed the guide throughout the management of the project. Further, APD has retained one of the authors as a project oversight consultant.

"Section II of the Tech Guide is titled "Conduct a Needs Analysis." The purpose of a needs analysis is to assess the current business processes and the existing technology environment, determine stakeholder and end-user needs, and use this information as a basis for documenting the general system requirements. APD conducted this analysis in several steps.

"First, as recommended by the Tech Guide, APD examined the current business processes and the existing technology environment. The results of this assessment can be found in several places, including the Project Charter, the Project Implementation Plan, and the Strategic Information Technology Plan. As discussed later, these results were

incorporated into the scope of work in the Request for Proposals (RFP) published for this project.

"Second, to determine stakeholder and end-user needs, we again followed the Tech Guide recommendations and conducted focus groups and interviews with representatives of every unit, department, and bureau within the department, including, but not limited to, officers, detectives, administrative staff, records staff, dispatchers, support staff, special units, supervisors, and command staff. We asked each group to envision their ideal information system, no matter how unlikely it might seem to be today. In addition, we asked of each group variations of the same three questions (the actual wording depending on the group's job function):

"1.   What kind of information would you like to query or have access to from you computer in the field (substation, or wherever is relevant to the group)?
"2.   What technological roadblocks could be removed to make your job easier?
"3.   What are the most important issues you would like us to keep in mind as we develop a modern police information system?

"We asked everyone to write down their answers on index cards and then we discussed the answers. Each focus group facilitator took notes and then at the end of the session collected the index cards and gave them to the project manager.

"The Tech Guide instructs that, following the focus groups and interviews, "The project manager must now translate the information culled from focus groups and interviews into specific hardware, software, and interface requirements. This step is interpretive and requires the Technical and User Committees to carefully review the flip charts and notes from the stakeholder meetings." Thus, the next step was to analyze the information and translate it into the hardware, software, and interface requirements. The project manager typed all of the responses and notes into an electronic spreadsheet, categorizing them first by a general category (e.g. records, dispatch, hardware, etc.) and then by more specific subcategories within each (e.g. traffic records, crime analysis, personnel, etc. within the records category). Duplicate responses were then collapsed into one response (e.g. if 20 officers asked to be able to access mug shots from the vehicle, it was recorded only

once – not 20 times). Responses were reviewed and discussed in great depth with the project team.

"After developing a draft of the user needs, the draft was sent back to the users to review. As a result of this review (and subsequent interviews), we added more items and revised others until each reviewer felt confident that the represented unit's needs were captured. As recommended in the Tech Guide, this spreadsheet became the requirements spreadsheet in the RFP that was published last August.

"The comprehensive needs analysis that included examining current business processes, the existing technological environment, and end-user and stakeholder needs translated into the scope of work that was also part of the RFP. As a result of this analysis, APD changed the scope of the project from one of procuring a records management system to procuring a comprehensive and fully integrated information system that includes records management, computer aided dispatch, field reporting, and mobile computing.

"It should be noted that the Tech Guide author said that the APD request for proposals was the most comprehensive he has seen. Other agencies are requesting copies of it as they are developing their own RFPs. In addition, the two vendors selected as finalists both said that they responded to the RFP because it was obvious that it was developed by the department, not by an outside consultant, and that it was comprehensive and clearly reflected end-user input.

"In summary, APD believes a thorough needs assessment was conducted, based on the DOJ Tech Guide."

AUDITOR'S COMMENT

OIAI asked five separate times since August 2002, to see documentation of a needs assessment and none was provided. In May 2005, the APD Project Manager stated that the needs assessment was documented on index cards and notes that were lost. This comprehensive response supported with documentation would have been more useful to OIAI during the audit.

4.   APD SHOULD IMPLEMENT AN ORGANIZATIONAL STRUCTURE THAT PROVIDES CONSISTENT MANAGEMENT TO EFFECTIVELY OVERSEE COMPLEX IT PROJECTS AND ONGOING IT OPERATIONS.

APD's Support Services Division is responsible for the overall management of the Department's IT projects and ongoing IT operations. During the period from FY2002 through FY2005, four different APD officers have held the position of the Support Services Division Manager. These APD officers are not technically experienced persons or have project management backgrounds. There has not been consistent management over the CAD/RMS project due to the frequent rotation of APD officers through the Support Services Division Manager position.

The lack of consistent management over complex information technology projects can cause a project to take longer to complete. The CAD/RMS integration project has been in process for over seven years. A lack of consistent management can have the following results:

- Funds spent on resources that are not cost effective solutions for the long-term.

- IT solutions that may not entirely solve the problem being addressed.

The 2003 APD Strategic Plan made the following comments regarding IT organizational structure:

"The current organizational structure and culture is a detriment to effective long-term implementation of any coherent IT strategy. . . . Turnover in technology leadership is high, truncating institutional memory as those in the leadership positions barely become aware of the basic IT issues before moving on to other assignments."

The Control Objectives for Information and related Technology (COBIT) – Planning & Organization (PO4.9), Supervision, state:

"Implementing adequate supervisory practices in line with the control practices will:

- Ensure that the IT function is appropriately controlled to meet the organisation's goals and objectives
- Help maintain effectiveness and efficiency of the IT function
- Provide a framework for identifying, escalating and resolving issues promptly"

The Control Objectives for Information and related Technology (COBIT) – Planning & Organization (PO7.2), Personnel Qualifications, state:

"The verification and promotion of personnel qualifications in line with the control practices will: Ensure the staff has an appropriate level of qualification, experience and skill for its role."

A project management team has been created to oversee the $38 million APD CAD/RMS system procurement and implementation project. The leader of this project management team reports to the Support Services Division Manager. This team leader is an APD officer that does not have experience managing large technical projects. During the last several budget cycles, APD has requested funds for an IT manager position to ensure consistent technically qualified management. APD requests were not approved.

RECOMMENDATION

APD should implement an organizational structure that provides consistent management to effectively oversee complex IT projects and ongoing IT operations.

APD should continue to seek approval to hire an IT manager who can provide qualified technical management over the department's IT projects and ongoing IT operations.

EXECUTIVE RESPONSE FROM APD

"The APD recognizes the need for an organizational structure to provide consistent management to oversee IT projects and ongoing operations. The need for this specialized organizational structure was not given sufficient priority in prior budget requests to be recommended for funding. A position paper requesting a Technical Manager and appropriate support staff for this project will be submitted during the FY/07 budget development cycle. In the interim, APD is attempting to determine if funding for at least a Technical Manager can be identified within the FY/06 operating budget."

5.   APD MANAGEMENT SHOULD REGULARLY REVIEW AND REVISE THE LONG-RANGE IT STRATEGIC PLAN.

APD implemented its IT Strategic Plan (plan) in December 2003. The Executive Endorsement section of this plan requires "APD to update this document annually." APD stated that the plan had not been reviewed and revised since initial implementation "due to issues within APD, such as limited staffing and turnover in upper management." The Support/Technical Services Section is in charge of implementing technology for the entire APD.

Without an IT Strategic Plan in place, APD Management is more likely to make poor and/or last minute decisions relating to technology. With a plan to purchase $38 million of Information Technology over a 5-year period, it would be reasonable to update the plan on an ongoing basis to reflect changes in circumstances or technology.

Control Objectives for Information and related Technology (COBIT) – Define a Strategic Information Technology (IT) Plan PO1 – IT Long-range Plan Changes PO1.4, states the following:

"A process for the modifications of IT long-range plans will:

- Ensure validity and relevance of the IT long-range plans in response to external changes and changes within the organization or IT.
- Ensure that IT long-range plans are reviewed on a regular basis."

RECOMMENDATION

APD management should regularly review and revise the long-range IT Strategic Plan.

EXECUTIVE RESPONSE FROM APD

"APD agrees that long-range IT plans should be regularly reviewed and revised, when appropriate and continues to try to identify staffing to accomplish this task on a regular and timely basis."

CONCLUSION

APD management should ensure that in the future, research is performed and planning is completed, prior to starting an IT project.

We appreciate the cooperation of the APD, AFD, DFAS/ISD, and DMD staff during the audit.

_____
Senior Information Systems Auditor

REVIEWED:

_____
Principal Auditor

APPROVED: **APPROVED FOR PUBLICATION:**

_____   _____
Carmen Kavelman, CPA, CISA, CGAP   Chairperson, Accountability in Government
Acting Director   Oversight Committee