AUDIT TEAM
Jim Williamson, CPA, CIA, City Auditor
Matt Weller, CPA, Assistant City Auditor
Brett Rangel, MS, CIA, Audit Manager

OKLAHOMA CITY RADIO SYSTEM RISK ASSESSMENT REPORT

JULY 29, 2014

July 29, 2014

The Mayor and City Council:

The Office of the City Auditor has completed a risk assessment of the Oklahoma City Radio System in response to the Oklahoma State Auditor & Inspector's April 30, 2013 special audit report noting a surplus inventory of City radios.

In 2006, the City began using a new 800 MHz Radio System initiated in 2002 and constructed at a total cost of more than $30 million. Production of the radio system was discontinued by the vendor in 2010 and the City's contract for support of the system expired on June 30, 2014. On July 15, 2014, the City Council approved a contract with the vendor for support of the radio system through June 30, 2017 with two one-year renewal options to extend support through June 30, 2019.

Since 2006, when use of the current 800 MHz radio system began, a new common digital language known as P25 has become the national standard for public safety radio communications. The City intends to transition to a P25 800 MHz Radio System before support for the current 800 MHz Radio System ends. Transition to a P25 Radio System is projected to take from 18 months to 4 years after a radio system vendor contract is awarded and cost at least $25 million, of which funding for only $3 million has been identified to date.
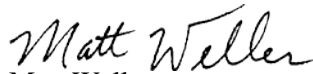
A comprehensive plan for competitive transition to a P25 Radio System has not been developed and non-public safety radio replacement needs have not been assessed. However, on July 15, 2014, the City Council approved a Request for Proposals (RFP) to be advertised for a radio system consultant to help the City:

- develop a project timeline and budget,
- identify financing strategies used by other organizations,
- assess communication alternatives for non-public safety departments, and
- select a radio system vendor.

Based upon the results of our risk assessment, we believe that management should continue efforts to develop a comprehensive plan for competitive transition to a P25 Radio System. These efforts should include selection of a radio system consultant to provide the services specified in the RFP and identification of possible funding alternatives for the City. See Recommendations (1) and (4).

All comments, recommendations, suggestions and observations arising from our risk assessment have been discussed in detail with appropriate representatives from management. These discussions were held to assure a complete understanding of the content and emphasis of items in this report. Responses to this report from management are attached.

Jim Williamson
City Auditor

Matt Weller
Assistant City Auditor

Brett Rangel
Audit Manager

OKLAHOMA CITY RADIO SYSTEM
RISK ASSESSMENT REPORT
AS OF FEBRUARY 28, 2014

BACKGROUND, SCOPE, AND METHODOLOGY

BACKGROUND

On March 14, 2000, the Oklahoma City voters approved a 32-month, ½-cent sales tax to fund several public safety capital improvement projects, including a new 800 MHz radio system enabling improved voice communications among public safety and other City employees.

On January 15, 2002, a radio system contract was awarded to M/A-COM, Inc. (M/A-COM). By January 2006, users began transitioning to the new system completed at a total cost of almost $30.4 million, of which $26.1 million related to the M/A-COM contract.[1] See Table 1. The radio system is administered by the Information Technology (IT) Department's Public Safety Capital Projects (PSCP) Office on behalf of City and City Trust employees and certain external users.[2]

TABLE 1.

Initial Radio System Implementation Costs	
Consulting, A&E and Testing	$ 406,252
Land and Construction	3,799,038
Other Equipment, Supplies and Services	99,349
Site Preparation and Construction Costs	**4,304,639**
System Equipment & Installation	15,378,072
Licensing/Maintenance	855,547
Radios (Handheld and Mobile)	9,844,217
Radio System Equipment and Service Costs	**26,077,836**
Total System Implementation Costs	**$30,382,475**

NOTE: The initial system implementation was 85% funded by the voter-approved tax and 15% funded by various City Trusts.

The M/A-COM radio system uses a specific proprietary digital radio communications language known as EDACS.[3] Only EDACS radios manufactured by M/A-COM (or Harris Corporation, who bought M/A-COM in 2009) will operate on the proprietary EDACS Radio System. Production of the EDACS Radio System was discontinued in 2010 with support continuing through 2017. Harris Corporation has recently proposed supporting the system through June 2019.[4] After support ends, higher associated support costs and limited parts availability requiring transition to a different radio system is presumed.

Since the 2006 implementation of the EDACS Radio System, P25 has become the national standard for public safety radios. P25 is a non-proprietary common digital language for radio communications intended to allow inter-agency communication and the use of any manufacturers'

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[1] The total M/A-COM contract amount was $26,150,451 (as amended), while total actual expenditures were $26,077,836. The contract also contained a price agreement for additional post-implementation services and equipment. As of February 28, 2014, post-implementation services and equipment purchases totaled $14,132,091, consisting of miscellaneous radios, services and equipment ($7,427,019); ongoing maintenance ($4,905,127); and grant-funded system enhancements ($1,799,945).

[2] External users include surrounding municipalities for whom the City's Radio Shop installs and maintains radio equipment for a nominal fee in accordance with City Council approved agreements.

[3] EDACS stands for Enhanced Digital Access Communications System.

[4] On July 15, 2014, the City Council approved a service agreement with Harris Corporation to provide preventative maintenance and repair of the City's 800 MHz Radio System through June 30, 2017 with the option of two one-year renewals to extend through June 30, 2019.

P25 radios on any P25 Radio System. The City intends to transition from the EDACS Radio System to a P25 Radio System before the proposed end of EDACS Radio System support in June 2019.

Management has purchased a $1.6 million Network Switching Center and related interfaces (Network Switching Center)[5] in 2010 and over $4.4 million of radios since 2012 from Harris Corporation. The Network Switching Center was purchased to enhance existing radio communications and enable future transition to a P25 Radio System. The purchased radios replaced public safety handheld radios reaching the end of their useful life in 2013 and management asserts the radios are capable of operating on both the current EDACS Radio System and a future P25 Radio System. Funding for the Network Switching Center came from a federal grant, while funding for the radios was from Oklahoma City Metropolitan Area Public Schools (OCMAPS) Use Tax funds.

As depicted in Table 2, about 5,338 City and Trust radios are currently in use on the EDACS Radio System. Management plans to continue replacing *public safety* radios with annual OCMAPS and Oklahoma City Capital Improvements (MAPS3) Use Tax allocations while available. However, the replacement of aging non-public safety radios is currently not planned until negotiation of the P25 Radio System contract. Until then, management plans to use the replaced public safety radios to repair and replace *non-public safety* radios, as necessary.

TABLE 2.

City Radio Inventories as of Feb 2014[6]		P25		Non-P25	
Department	Total	Handheld	Mobile	Handheld	Mobile
Public Safety Departments	**3,229**	1,492[7]	21	355	1,361
Other City Departments & Trusts	**2,109**	7	11	1,138	953
Total Installed Radios	**5,338**	**1,499**	**32**	**1,493**	**2,314**

On October 2, 2012, the City Council approved a resolution authorizing the Mayor to request an audit by the Oklahoma State Auditor and Inspector (SA&I) of a contract relating to several sales tax funded public safety capital improvement projects. On April 30, 2013, the SA&I issued a special audit report noting a surplus inventory of 824 500M Data Radios purchased at a cost of $852,016. The City Auditor's response to the SA&I's report indicated that risks relating to the PSCP Office would be reassessed in light of the information in the SA&I report.[8]

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[5] A Network Switching Center manages and routes communications among radio system users. The related interfaces allow communications among users of differing radio system technologies (e.g., EDACS, P25, etc.) and radio system equipment manufacturers (e.g., Harris, Motorola, etc.). Management asserts the Network Switching Center and related interfaces not only enhance current user communications, but are also required to transition current users to any new P25 Radio System.

[6] These unaudited radio counts were provided by Radio Shop management during February 2014 and exclude stored radios removed from service, radios owned by external users of the City's radio system, and some recent radio purchases. While these totals are management's best current estimate, existing radio inventory records are not complete (see COMMENT 3).

[7] Approximately 181 of these public safety handheld radios had not yet been placed into service and were included in inventory counts of radios assigned to IT along with an additional 30 radios kept in stock by IT as spares.

[8] On April 29, 2014, the Office of the City Auditor issued a separate Summary of Findings describing the significant decisions and circumstances leading to the surplus inventory of 500M Data Radios.

SCOPE AND METHODOLOGY

The Office of the City Auditor has assessed City radio system risks as of February 28, 2014. Procedures performed included interviewing IT Department management and PSCP Steering Committee[9] members; researching radio system technologies; reviewing relevant contracts, inventory and financial records, and PSCP Steering Committee minutes. Our work did not include performing an audit of any of the above operations.

RESULTS OF WORK PERFORMED

Recommendations included in this report are intended to provide constructive suggestions for reducing certain risks noted during our assessment. Each recommendation is immediately followed by *management's response*, which is attached to this report in its entirety.

COMMENT (1)

A comprehensive plan for transitioning to a P25 Radio System should be developed. In recent years, management had:

- Purchased a Network Switching Center costing $1,627,333 from Harris Corporation in 2010. The purchase was funded with a 2009 federal grant jointly approved by State and local government representatives of the Central Oklahoma Urban Area Security Initiative (COUASI).[10]
- Replaced public safety handheld radios (reaching the end of their estimated useful life in 2013) with EDACS and P25-capable radios purchased from Harris Corporation[11] costing more than $4.4 million. The purchases were primarily funded with annual OCMAPS Use Tax allocations since 2012.
- Planned to request competitive bids for microwave equipment necessary for the P25 transition and fund the purchase with $3 million of Police and Fire Public Safety Sales Tax Funds.

While transition to the P25 Radio System in stages using Harris Corporation as the primary vendor would be less complicated, such an approach would result in a less competitive system transition. During our risk assessment, management decided to delay the microwave equipment purchase and hire a radio system consultant to develop a comprehensive radio system transition plan (including a projected timeline and final budget) and facilitate vendor selection (e.g., RFP

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[9] The PSCP Steering Committee was created prior to initiation of public safety capital improvement projects funded by the sales tax to facilitate project coordination and decision making and provide executive leadership, oversight, and accountability during regularly scheduled monthly meetings. The Committee included representatives from the City Manager's Office; the PSCP Office; IT; Police, Fire, and other affected departments.

[10] The Urban Area Security Initiative (UASI) is a U.S. Department of Homeland Security grant program providing financial assistance for terrorism preparedness and response in high-threat, high-density urban areas. The Central Oklahoma UASI is a federally designated urban area covering Oklahoma, Cleveland, McClain, Pottawatomie, Canadian, Lincoln and Logan counties. The 2009 COUASI grant, totaling $1.8 million, also funded $172,612 for a separate, stand-alone, mobile P25 Radio System and radios for large, mutual aid emergency responses throughout the State.

[11] As noted previously, new radios that will operate on the EDACS Radio System are only manufactured by Harris Corporation. Management asserts these purchased radios will work on both the current EDACS and any new P25 Radio System.

preparation, vendor evaluation, and contract negotiation). A Request for Proposals (RFP) from radio system consultants is currently being developed.

P25 Radio System implementation is projected to take from 18 months to 4 years from the contract date and cost at least $25 million,[12] of which funding for only $3 million has been identified to date. Therefore, management will need to select a radio system consultant to develop a project timeline and budget and begin identifying funding alternatives[13] as soon as practical.

RECOMMENDATION (1)

Management should continue efforts to develop a comprehensive plan for a timely, competitive transition to a P25 Radio System. The plan should include:

- Selection of a radio system consultant[14] to help
    - Develop a detailed project implementation timeline and final budget,
    - Identify financing strategies used by other entities, and
    - Select a radio system vendor (e.g., RFP preparation, proposal evaluation, and final contract negotiation).
- Identification of possible funding alternatives for the City.

INFORMATION TECHNOLOGY RESPONSE (1)

Agree with recommendation. Development of the radio consultant RFP is complete and was sent to Council July 15th for authorization to release.

FINANCE DEPARTMENT RESPONSE (1)

Agree with recommendation. The Finance Department will work with the Information Technology Department and the City Manager's Office to develop funding alternatives to replace the current radio system.

The radio system consultant will be providing funding plans used by other jurisdictions and options offered by vendors for financing system replacement. The funding alternatives will consider the recommendations from the radio system consultant. Radio system funding alternatives will be presented to the City Manager's Office by December 2014, or following the completion of the radio system replacement study.

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[12] As of February 2014, management estimates $25 to $27 million of system transition costs, consisting of $20 to $22 million for system replacement costs and about $5 million in P25-ready non-public safety radio replacement costs.

[13] Possible funding alternatives include funding from City Trusts and/or surrounding municipalities currently using the City's radio system.

[14] On July 15, 2014, the City Council approved a Request for Proposals to be advertised for professional services to assist in the planning and procurement process as needed to upgrade or replace the City's existing 800 MHz Trunked Radio System.

COMMENT (2)

Though complying with formal requirements at the time, the City Council was not informed of the purpose, amount, and planned use of the $1.8 million COUASI grant used to purchase the Network Switching Center and related interfaces in 2010. While the grant was approved by the Mayor, City Council approval of the grant award was not obtained. Further, the City Council was not otherwise notified of the purchases as they were made using a post-implementation services and equipment price agreement clause in the EDACS Radio System implementation contract approved by City Council in 2002.

In January 2011, the Finance Department issued a Grant Policies and Procedures Manual formalizing grant management roles, responsibilities, oversight, and controls to managers of City grant programs. Formal City Council approval of all grant awards is included in the Manual along with other improvements intended to enhance grant compliance and reporting. However, issuing the Manual under the authority of the Finance Department may not adequately emphasize the importance of City Council grant award approvals.

RECOMMENDATION (2)

A resolution requiring City Council approval of the purpose, amount, obligations, and planned use of all City grant awards should be presented to the City Council for consideration.

FINANCE RESPONSE (2)

Agree with recommendation. This policy is documented in the City's grants manual. We will prepare a resolution for the City Council to approve the policies established by the grants manual and emphasize the requirement for applications and awards to be approved by Council prior to acceptance.

COMMENT (3)

Existing radio inventory records are not complete and related reporting is not efficient. The City Radio Shop maintains about 5,338 radios on the City's radio system valued at around $12 million. Inventory and reporting weaknesses include the following:

- Departmental assignments and indications of system compatibility (e.g., EDACS, P25, etc.) are incomplete.
- Relevant dates (e.g., purchase, in-service, and discontinuation), estimated useful lives, and original costs are not captured.
- Unused and uninstalled radio inventory records are incomplete.
- Inventory reports must be manually generated to obtain accurate counts.

Incomplete inventory records and inefficient reporting limit management's ability to effectively manage radio inventories. To better facilitate inventory management and replacement decisions, management is currently working to improve radio inventory records and automate inventory reporting.

RECOMMENDATION (3)

Management should continue to improve inventory records and related reporting to facilitate inventory management and replacement decisions. At a minimum, improvements should allow:

- Automated reporting of radio counts by model, department, system compatibility, etc. and
- Improved monitoring of useful life and system compatibility to help determine future replacement needs.

INFORMATION TECHNOLOGY RESPONSE (3)

Agree with recommendation. A proposed project has been developed to publish an RFP for specialized inventory management software for radio systems. The expectation is that this software will have the necessary integration and automation to allow more timely and efficient management of radio inventories.

The IT Department requested and received an Inventory Technician position to be added to the Public Safety Communications program (Radio Shop) which will be dedicated to inventory management.

COMMENT (4)

Future radio replacement plans should include an assessment of non-public safety radio replacement needs. In 2006, the City began using around 4,700 handheld and mobile radios purchased for $9.8 million as part of the EDACS Radio System implementation contract. Purchased handheld radios reached the end of their estimated 5- to 7-year useful life between 2011 and 2013; while purchased mobile radios will reach the end of their estimated 7- to 10-year useful life between 2013 and 2016.

Since 2012, management has used OCMAPS Use Tax funds to purchase more than $4.4 million of public safety handheld radio replacements for those reaching the end of their estimated useful life in 2013. Annually, management plans to continue using about $1.7 million of MAPS3 Use Tax allocations to replace the remaining public safety radios mostly consisting of mobile radios expected to reach the end of their estimated useful life by 2016. These funds are projected to be available for this use through 2017.

Management plans to defer approximately $5 million of non-public safety radio replacements until negotiation of the new P25 Radio System contract. However, plans had not been made to assess non-public safety radio utilization and assignments (in conjunction with other communication

device assignments)[15] to verify the need for radio replacements. Management is now considering adding an assessment of the most cost effective means of communication for non-public safety employees to the radio system consultant RFP noted in COMMENT (1).

Given the projected magnitude of radio replacements, excessive costs could result without verification of the need for non-public safety radios.

RECOMMENDATION (4)

To ensure the most cost effective transition to the P25 Radio System, management should continue plans to:

- Defer non-public safety radio replacements until negotiation of the P25 Radio System implementation contract.
- Include assessment of the most cost effective means of communication for non-public safety employees in the radio system consultant RFP. See RECOMMENDATION (1).

INFORMATION TECHNOLOGY RESPONSE (4)

Agree with recommendation. Deferring non-public safety radio replacements until negotiation of the P25 Radio System implementation contract has always been the strategy. A separate Request for Bids will be published near the P25 system implementation time frame to gain competitive multi-vendor pricing agreements for P25 compatible radios. We would expect to save significant dollars by holding non-public safety radio replacements until those pricing agreements are available. Until that time the non-public safety radios will be past end-of-life. The IT department will utilize replaced public safety radio inventories as spares. An assessment of underutilized radios and cheaper communication alternatives will be within the scope of the radio system consultant RFP.

COMMENT (5)

The duration of vendor-provided parts and service support was not sufficient for all radios purchased during PSCP implementation.[16] While vendors generally provide a standard minimal time period for parts and service support, exclusion of a reasonable time-specific requirement from the P25 Radio System vendor contract could result in the need to replace expensive radio equipment without realization of the full economic benefit.

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[15] Although management does not maintain, distribute, review, or compare records of employee-assigned communication devices, our limited review identified a few employees that could have more than one type of communication device.
[16] See Finding 2 in the Summary of Findings report issued by the Office of the City Auditor on April 29, 2014, relating to receipt of discontinued 500M Data Radios.

RECOMMENDATION (5)

Management should ensure inclusion of reasonable time-specific parts and service support for major P25 Radio System components in the vendor contract.

INFORMATION TECHNOLOGY RESPONSE (5)

Agree with recommendation. This is a goal that the department strives to achieve on all technology-related projects, and will attempt to ensure maximum longevity for the replacement system and radio products. It is important to recognize that both government and industry standards often change in the communications sector, especially within public safety. The expectation is that the radio system consultant will assist in the identification of any potential industry changes that could jeopardize the value of the City's investment.

COMMENT (6)

A means of ensuring appropriate and timely communication with user departments should be established for P25 Radio System transition. Project management best practices include determining the project information needs of users, how such information will be provided in a timely manner, and how project progress will be reported. A formal communication process for engaging project user departments has not been established.

Operational needs and purchase decisions may not be adequately discussed, evaluated, and coordinated and P25 Radio System transition, estimated to cost at least $25 million, may not occur in the most cost-effective manner without regularly engaging and communicating with user departments.

RECOMMENDATION (6)

A representative committee of user department personnel should be established to ensure timely and appropriate communication of P25 Radio System project information. The established committee should facilitate:

- User department communication of project needs/expectations.
- User department participation and feedback.
- Communication with user departments of specific project goals/targets and progress towards those goals/targets.

INFORMATION TECHNOLOGY RESPONSE (6)

Agree with recommendation. A representative committee specific to the radio system replacement project will be established at the appropriate time for that project. The Public Safety Steering Committee is serving as the project communication and oversight body for the radio system consultant portion of the anticipated project.
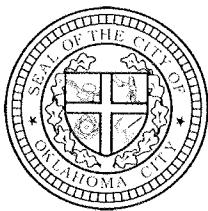
MEMORANDUM

The City of
OKLAHOMA CITY

TO: Jim Williamson, City Auditor

THROUGH: James D. Couch, City Manager

FROM: Schad Meldrum, IT Director

DATE: July 16, 2014

SUBJECT: Special Project No. 191B-Radio System Risk Assessment Report

IT's Response to Auditor's Radio System Risk Assessment Report 6/20/2014

INFORMATION TECHNOLOGY RESPONSE (1)
Agree with recommendation – Development of the radio system consultant RFP is complete was sent to Council July 15th for authorization to release.

INFORMATION TECHNOLOGY RESPONSE (3)
Agree with recommendation – A proposed project has been developed to publish an RFP for specialized inventory management software for radio systems. The expectation is that this software will have the necessary integration and automation to allow more timely and efficient management of radio inventories.
The IT Department requested and received an Inventory Technician position to be added to the Public Safety Communications program (Radio Shop) which will be dedicated to inventory management.

INFORMATION TECHNOLOGY RESPONSE (4)
Agree with recommendation – Deferring non-public safety radio replacements until negotiation of the P25 Radio System implementation contract has always been the strategy. A separate RFB will be published near the P25 system implementation time frame to gain competitive multi-vendor pricing agreements for P25 compatible radios. We would expect to save significant dollars by holding non-public safety radio replacements until those pricing agreements are available. Until that time the non-public safety radios will be past end-of-life. The IT department will utilize replaced public safety radio inventories as spares. An assessment of underutilized radios and cheaper communication alternatives will be within the scope of the radio system consultant RFP.

INFORMATION TECHNOLOGY RESPONSE (5)

Agree with recommendation - This is a goal that the department strives to achieve on all technology-related projects, and will attempt to ensure maximum longevity for the replacement system and radio products. It is important to recognize that both government and industry standards often change in the communications sector, especially within public safety. The expectation is that the radio system consultant will assist in the identification of any potential industry changes that could jeopardize the value of the City's investment.

INFORMATION TECHNOLOGY RESPONSE (6)

Agree with recommendation - A representative committee specific to the radio system replacement project will be established at the appropriate time for that project. The Public Safety Steering Committee is serving as the project communication and oversight body for the radio system consultant portion of the anticipated project.
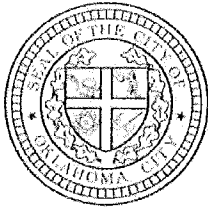
MEMORANDUM
The City of
OKLAHOMA CITY

TO: Jim Williamson, City Auditor

THROUGH: James D. Couch, City Manager

FROM: Craig Freeman, Finance Director

DATE: July 2, 2014

SUBJECT: Special Project No. 191B - Radio System Risk Assessment Report

Recommendation (1)
Management should continue efforts to develop a comprehensive plan for a timely, competitive transition to a P25 Radio System. The plan should include:

- Selection of a radio system consultant to help
  - Develop a detailed project implementation timeline and final budget,
  - Identify financing strategies used by other entities, and
  - Select a radio system vendor (e.g., RFP preparation, proposal evaluation, and final contract negotiation).
- Identification of possible funding alternatives for the City.

Finance Department Response (1)
Agree with recommendation. The Finance Department will work with the Information Technology Department and the City Manager's Office to develop funding alternatives to replace the current radio system.

The radio system consultant will be providing funding plans used by other jurisdictions and options offered by vendors for financing system replacement. The funding alternatives will consider the recommendations from the radio system consultant. Radio system funding alternatives will be presented to the City Manager's Office by December 2014; or following the completion of the radio system replacement study.

Recommendation (2)

A resolution requiring City Council approval of the purpose, amount, obligations, and planned use of all City grant awards should be presented to the City Council for consideration.

Finance Department Response (2)

Agree with recommendation. This policy is documented in the City's grants manual. We will prepare a resolution for the City Council to approve the policies established by the grants manual and emphasize the requirement for applications and awards to be approved by Council prior to acceptance.