

**Second Follow-Up Analysis Report  
of the Review of Allegheny County's  
Emergency Services 9-1-1 Division's  
System Malfunction that Occurred  
on October 25, 2006  
(Report Issued May 22, 2007)  
(First Follow-Up Issued November 28, 2008)**

**September 2, 2009**

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## **Contents**

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Letter	1
Executive Summary	4
I. Introduction	6
II. Scope and Methodology	8
III. Findings and Recommendations	9
IV. Conclusion	53

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**MARK PATRICK FLAHERTY**  
CONTROLLER

# COUNTY OF ALLEGHENY

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**GUY A. TUMOLO**  
DEPUTY CONTROLLER

August 27, 2009

Mr. Robert Full  
Chief of Emergency Services  
400 North Lexington Street  
Pittsburgh, PA 15208

**Second Follow-Up Analysis Report  
of the Review of Allegheny County's  
Emergency Services 9-1-1 Division's  
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on October 25, 2006  
(Report Issued May 22, 2007)  
(First Follow-Up Issued November 28, 2008)**

Dear Chief Full:

The Controller's Office has performed procedures to update our review of Allegheny County's Emergency Services 9-1-1 Division's System Malfunction that occurred on October 25, 2006. The initial report was issued on May 22, 2007 and a follow-up review was subsequently performed and issued on November 28, 2008. The procedures we performed during our second follow-up review evaluated the operational changes, processes, design, and management of the 9-1-1 system since our last review, and assessed the implementation status of the findings and recommendations contained in the aforementioned report.

The results of our updating procedures revealed that only a limited number of recommendations were fully implemented and underlying conditions resolved since our last review. We noted that the passage of time and events that have occurred made several of the recommendations no longer applicable. We were told by management that many of the recommendations are intended to be implemented once a contractor is engaged to provide enhanced maintenance services for the entire 9-1-1 system.

Chief Robert Full  
August 27, 2009

We assigned a subjective rating to document our assessment as to whether the stated recommendations had been implemented and related findings resolved. A scale of 0-5 was utilized, where 0 represents no change made and 5 represents recommendation completely implemented and issue resolved. Of the 32 recommendations from the prior review, two were no longer applicable (findings #4 and #24). Therefore, the following is a summary of the status of the implementation of the 30 remaining recommendations:

<u>Grade Used to Assess Status</u>	<u>Number of Findings/Recommendations</u>
0	1
1	1
2	4
3	5
4	7
5	7
Not Applicable	5

Overall, of the 30 recommendations, our review disclosed a cumulative score of 87 out of a possible 125 points, or 70%. This is an improvement from the last review which resulted in a score of 49%. However, the increase in the score can be attributed to the 5 recommendations which are no longer applicable due to the passage of time as well as contracts which have expired. These 30 recommendations are detailed below:

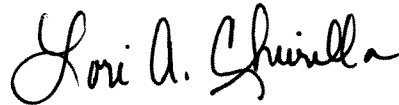
- No resolution was made to 1 or 3% of the 30 recommendations.
- 9 or 30% of the recommendations were addressed, but no further action was taken.
- 8 or 27% of the recommendations were partially implemented.
- 7 or 23% of the recommendations were fully implemented, of which 2 had been fully implemented during the last review.
- 5 or 17% of the recommendations are no longer applicable.

We recommend that the Department of Emergency Services continue to devote substantive attention to the development of the comprehensive RFP for enhanced maintenance services for the entire 9-1-1 system.

Chief Robert Full  
August 27, 2009

We would like to thank the management and staff of the 9-1-1 team for their courtesy and cooperation.

Very truly yours,



Lori A. Churilla  
Assistant Deputy Controller, Auditing



MARK PATRICK FLAHERTY  
Controller

cc: Honorable Richard Fitzgerald, President of Allegheny County Council  
Honorable William Russell Robinson, Allegheny County Council  
Honorable Dan Onorato, Chief Executive  
Mr. James Flynn, Jr., Allegheny County Manager  
Ms. Amy Griser, Budget Director  
Mr. Joseph Cantanese, Director of Constituent Services, Allegheny County Council  
Ms. Jennifer Liptak, Budget Officer, Allegheny County Council  
Mr. Guy A. Tumolo, Deputy Controller, Controller's Office  
Ms. Pamela Goldsmith, Communications Director, Controller's Office

We performed procedures to assess the status of the implementation of recommendations made to evaluate the 9-1-1 system as a result of the system malfunction that occurred on October 25, 2006.

While applying our procedures, we noted that as a result of the passage of time and events that have occurred, several of the findings and recommendations are no longer applicable. Specifically, the recommendations pertaining to the pricing or services under the contract for the design, assembly, and implementation of the Patriot Sentinel System cannot be implemented since the system was completed and conditionally accepted by the County 9-1-1 team (a few minor items not pertinent to public safety remain to be implemented) and entered the warranty period as of April 25, 2009.

During the performance of our procedures, we also noted that many of the recommendations are intended to be implemented by a contractor once a contractor is selected to provide enhanced maintenance services. The Department of Emergency Services is currently drafting a Request for Proposals (RFP) for enhanced maintenance services for the entire 9-1-1 system. The RFP is expected to take some time to complete, since it must be specific and comprehensive in the manner it addresses technical matters as well as compensation for services to be provided. However, the Department of Emergency Services believes that developing an appropriate RFP to obtain the enhanced maintenance services will facilitate the selection of the best contractor in consideration of both service and cost, and is therefore in the best interest of the general public and Allegheny County.

The table on the next page identifies the recommendations and documents our assessment of the implementation status of these recommendations. We utilized a subjective grading system to document our assessment of the implementation status of recommendations. On a scale from 0-5, 0 represents no change made, and 5 represents recommendation completely implemented and issue resolved. As discussed above, we also assessed some recommendations as "not applicable".

**Recommendation Analysis Table**

Finding Number	Description	Changed Process to meet or exceed finding – 1st Follow-Up	Changed Process to meet or exceed finding – 2 <sup>nd</sup> Follow-Up
1	Raise a ticket with Embarq during any innocuous outage	3	3
2	Develop roles and responsibilities document for all parties	3	5
3	Assign day-to-day ownership of Embarq contract to a County employee	4	4
4	County management become active in large 9-1-1 projects	Not Applicable	Not Applicable
5	Develop Problem Management team for root cause analysis	2	3
6	Develop Change Management process; enforce vendors to adopt	3	3
7	Develop Release Management process and enforce vendors to adopt	2	3
8	Review all alarm thresholds	4	4
9	Regularly document information regarding system availability including alarms received, scheduled changes and outages etc.	0	1
10	Simulate a BCDR incident at least once a year	2	5
11	Implement off-site backup storage process	5	5
12	Define a maintenance schedule for all areas of the 9-1-1 solution	1	2
13	Re-negotiate contract to bring Embarq's Service Level Agreements in line with County obligation to meet state law	4	4
14	Engage Kimball on a fixed fee, time-based penalty basis	4	5
15	Develop warning for any call in queue for more than 5 minutes	4	4
16	Develop warning for any call not disconnected after a pre-determined amount of time	4	4
17	Purchase and implement a redundant DBMS	4	5
18	Relocate Embarq technician within Lexington Street	5	5
19	Comply with Section 5.14 and 8.2 of the NENA standards	4	4
20	Re-price Embarq maintenance contract	0	Not Applicable
21	Sign master agreement with Embarq solidifying discounts	0	Not Applicable
22	Centralize procurement processes to ensure best value from vendors	0	2
23	Determine County requirements of Embarq and re-negotiate contract	0	2
24	Review value of on-site Embarq technicians and re-negotiate contract	Not Applicable	Not Applicable
25	Seek reimbursement for incorrect maintenance pricing	0	Not Applicable
26	Terminate Embarq current contract and re-negotiate contract terms	0	2
27	Review quote and make appropriate changes before final approval	0	0
28	Audit hours used by Kimball and evaluate activities completed	4	5
29	Review current and implement new operational standards	3	4
30	Halt Wireless Phase II Project and review Embarq's implementation and support proposal	4	Not Applicable
31	Re-negotiate Embarq Scope of Work	2	Not Applicable
32	Generate an issue log and milestone schedule for Wireless Phase II project	3	3

## I. Introduction

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### **Purpose:**

The Allegheny County Controller's Office has performed procedures to complete a second follow-up review of the "Review of Allegheny County's Emergency Services 9-1-1 Division's System Malfunction that occurred on October 25, 2006" report, which was issued on May 22, 2007. The first review report was issued on November 28, 2008. Our updating procedures evaluated the operational changes, processes, design and management of the 9-1-1 system since our last review and assessed the implementation status of the findings and recommendations contained in the aforementioned report and first follow-up review.

### **Background:**

The 9-1-1 network is a vital part of our County's emergency response and disaster preparedness system. The Allegheny County 9-1-1 Division of Emergency Services (DES) began operations in 1997. The 9-1-1 Center processes approximately 3,700 requests for emergency services per day from the Point Breeze location. This site contains one-half of the phone and computer equipment and houses all of the 9-1-1 employees. The second site is an unmanned center located in the Strip District that houses the other half of the phone and computer equipment. This center is the backup 9-1-1 center which could become staffed and operational if the Point Breeze site became inoperable.

The County 9-1-1 Center maintains address records for over 1,300,000 phone lines. These address records enable the County 9-1-1 dispatchers to dispatch emergency responders to locations in the County based on the Automatic Number Identification (ANI) information, similar to caller ID, that is forwarded to the dispatchers with the call. The County's equipment includes a routing database that directs calls to call-taking groups and designated dispatch zones within the 9-1-1 Center. The County Public Safety Answering Point (PSAP) is operationally divided into four PSAP zones within the call center, with each zone being primarily responsible for a designated region within Allegheny County. The four PSAP zones are all physically located at the Point Breeze site and are known as the Central, North, East and South zones. The 9-1-1 dispatcher workstations that respond to the East and South zones are primarily supported by the Point Breeze automatic number identification (ANI) and the automatic location identification (ALI) Controller. The

## I. Introduction

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Strip District ANI/ALI Controller primarily supports the Central and North zones.

According to 911 Management, with the transition to the current Patriot Environment two switches and two selective routers now exist, one each in Point Breeze and the Strip District. The devices from either location now provide service to all zones; Central, East, North and South. This is not intended to state that an unknown anomaly could not somehow inhibit a specific cross traffic route between as did occur on 10/26/06. However cross route now exist between the selective router and the 9-1-1 switches.

The alternate routing capabilities are strengthened as cross routes now exist switch to switch and router to router. These redundant routes did not exist on 10/26/06. Now there is service at each zone should one switch or selective router fail.

## II. Scope and Methodology

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Our review focused on progress made since the original report was released to the County 9-1-1 team on May 22, 2007 and the subsequent follow-up report issued November 28, 2008. The County 9-1-1 team provided us with written responses intended to summarize the status of the implementation of the consultant's recommendations. The following procedures were performed:

- Reviewed the findings and recommendations in the "Emergency Services 9-1-1 Division's System Malfunction that occurred on October 25, 2006" report, and the subsequent follow-up report issued November 28, 2008 noting the implementation status of the recommendations.
- Reviewed the written responses provided by the County 9-1-1 team.
- Made inquiries of the County 9-1-1 team members and examined contracts, invoices, process and control documentation, various data logs and reports, and other documentation as deemed necessary to assess the status of the implementation of the recommendations.

The initial review was conducted during the period from October 2007 through March 2008. Our first follow-up review was conducted through November 2008. This second follow-up review was conducted by the Controller's Office during June and July 2009.



### III. Findings and Recommendations

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County 9-1-1 management reviews TSRs (Trouble Service Reports) on a daily basis. TSRs are also discussed at the weekly management meeting. TSRs are provided to all members of the County 9-1-1 management team electronically.

#### **Controller's Review of 9-1-1's Actions Taken**

Per Mike Lupinacci, Assistant 9-1-1 Communications Manager, QAES has agreed to provide this upgrade to the system. The priority levels will be 1 – 4 with an explanation of each level so that the end user knows which one to use. Per James R. Thompson, 9-1-1 Coordinator, this solution should be ready to be implemented this month as QAES is working on it at the time of the review. The alarm thresholds are being developed by QAES. There will be 4 thresholds (1-4) with 1 being the most severe (a major outage requiring immediate service) and 4 being a billable service (e.g. non-emergency software/hardware upgrades). As of the date of this review, the QAES alarm thresholds have not been implemented so it could not be reviewed by the Controller's Office.

James R. Thompson, 9-1-1 Coordinator, met with Embarq's Service Manager on June 17, 2009. Embarq agreed to input requested data into the QAES system when that system is adopted. As of the date of this review, the QAES solution has not been implemented so it could not be examined by the Controller's Office.

Emergency Services Management's policy for TSRs requires County 9-1-1 management to review TSR reports on a daily basis. TSRs are sent electronically to members of management when they are filled out. There is also a matrix of management responsibility for the various types of TSRs because TSR's are used for all issues that affect the operations of 9-1-1, not just the Sentinel Patriot System. All members of the 9-1-1 management team have access to TSRs. TSRs are discussed in the weekly 9-1-1 management meeting as well as in ad-hoc informal meetings that take place when necessary. The Controller's Office reviewed the online TSR process. However, this process will change once the Enhanced Maintenance RFP is issued and a contractor is selected to provide the enhanced maintenance services.

### III. Findings and Recommendations

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**Consultant's Finding # 2** Kimball and Associates' role in the day-to-day 9-1-1 operations is not clear, nor communicated throughout the team. Kimball believes they are not responsible for process development for operational activities; the 9-1-1 team does.

Embarq's contractual obligation and the County's expectations of Embarq's responsibilities are vastly different.

**Consultant's Recommendation** The Allegheny County 9-1-1 Division of Emergency Services should write and distribute a clear set of roles and responsibilities for all key personnel, including those at Embarq and Kimball and Associates. This is the responsibility of County management or a party assigned by the County, and may require contract re-negotiation.

**Management's Prior Response** Job descriptions do exist outlining the responsibility of all personnel within the Department. We believe that within the Scope of Work ("SOW") provided under the existing contracts this was sufficient since the contract was approved and fully executed within the given system. We will review the current contract based on this recommendation. We would appreciate any guidance from the Controller's Office as to specific language that they would like to see addressed in future contracts under the SOW as to roles and responsibilities of contracting parties

**1<sup>st</sup> Follow-up:  
Status of Finding** Partially implemented. Score: 3

**Current Status of Finding** Fully Implemented. Score: 5

**Management's Current  
Response/Actions Taken** The County 9-1-1 management team have completely updated the roles and responsibility documents for all staff within the department.

The County 9-1-1 management team has worked with Robert Kimball and Associates to enhance the SOW to include roles and responsibilities for the parties involved.

### III. Findings and Recommendations

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#### **Controller's Review of 9-1-1's Actions Taken**

The County 9-1-1 management team provided the Controller's Office with roles and responsibilities for the following 9-1-1 positions:

- 9-1-1 Training Manager;
- 9-1-1 Coordinator;
- 9-1-1 Manager;
- Assistant 9-1-1 Manager;
- Computer Aided Dispatching Technician;
- Lead Telecommunicator;
- Radio Systems Coordinator;
- Communications Shift Commander;
- Communications Shift Commander II;
- Telecommunicator;
- 9-1-1 Quality Assurance Manager; and
- 9-1-1 Quality Assurance Assistant.

These roles and responsibilities provide an overall description of the position and a list of job duties. They also list knowledge, educational and experience requirements. County 9-1-1 management also provided a copy of the organizational structure and authority policy. This policy defines the line of authority, responsibility and accountability for each position in the Allegheny County 9-1-1 center. It also defines the structure of internal work teams, delegation of authority and supervisory responsibilities. Based on the review of the documents by the Controller's Office and discussion with Emergency Services management, these documents appear to be comprehensive as to the duties and requirements for each position. The roles and responsibilities documents provided to the Controller's office appear to satisfy the recommendations made by the consultant.

County 9-1-1 management provided the Controller's Office with a current copy of Kimball and Associates SOW. The SOW has language in the document defining Kimball and Associates roles and responsibilities with regards to the following areas:

- Project Initiation
- Project Planning
- Project Execution

### III. Findings and Recommendations

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- Project Monitoring and Control
- Project Closing

The SOW specifies Kimball's responsibility for staffing, communications, milestones and deliverables. Allegheny County 9-1-1 management also provided the Controller's Office with a "Project Scope Statement" that is used in conjunction with the SOW. This document specifies which components of the project that Kimball is responsible for, which components Kimball is to provide support to County 9-1-1 management and which components are the sole responsibilities of County 9-1-1 management. The SOW and "Project Scope Statement" provided to the Controller's office appears to satisfy the recommendations made by the consultant.

**Consultant's Finding # 3**

There is no management by the County of the Embarq contract or personnel.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should immediately assign responsibility to monitor the terms of the Embarq contract to a County employee with proven technical contract management experience, or a designee of the County.

**Management's Prior Response**

The County 9-1-1 team does have employees that monitor the work flow of technical contracts. All calls for service are logged to a Trouble/Service Report (TSR), and response times are routinely monitored. Follow ups are required on all TSRs and there is regular interaction with technicians. The 9-1-1 Assistant Manager's primary role is to address all technological needs for the 9-1-1 division and to interact with the contractors on a daily basis. However we recognize that greater documentation of these interactions is necessary.

**1<sup>st</sup> Follow-up:**

**Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Management's Current**

**Response/Actions Taken**

James R. Thompson, 9-1-1 Coordinator, is charged with monitoring the Embarq contract. Mr. Thompson has an extensive professional and technical background in emergency management and telecommunications. A

### III. Findings and Recommendations

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conference call is conducted every two weeks between County 9-1-1 management, Embarq and Plant/CML. Embarq and Plant/CML also meet on a weekly basis to discuss open tickets. Embarq provides information from the meeting to Mr. Thompson.

TSRs can be viewed electronically by all members of the County 9-1-1 management team. Currently, the system is only being used as a communication vehicle for TSRs. County 9-1-1 management can print “canned” reports but the system currently lacks the ability to print customized reports or search the TSR database for specific items. County 9-1-1 management will seek these system enhancements are part of the Enhanced Maintenance RFP currently in development.

#### **Controller’s Review of 9-1-1’s Actions Taken**

The Controller’s Office met with James R. Thompson (9-1-1 Coordinator) and determined that he monitors the hand written “Daily Activity Log” on an ongoing basis. Mr. Thompson met with Embarq’s Operation Manager on June 17, 2009 to discuss Embarq entering non-project items into the ‘QAES’ computer based format once one is adopted rather than the handwritten log. Embarq has agreed to enter information into an electronic format when a new solution is adopted. This will be a requirement as part of the RFP for Enhanced Maintenance for the entire 9-1-1 system. Once a new vendor is selected, this process will be fully automated. Per Diane DePalma, Assistant Chief Administration, the RFP process could take 6 to 9 months after the RFP is sent out to vendors. The Enhanced Maintenance RFP is currently in a draft form.

The weekly meetings, while entitled project meetings, are actually dual purpose meetings that covered both project implementation and operational issues. These meetings are held every Monday. 9-1-1 management discusses both project and operational related issues, many of which are reported on the TSR. These reports are distributed electronically via email to all members of the 9-1-1 management team when executed. Per Mike Lupinacci, Assistant 9-1-1 Communications Manager, there are also ongoing informal ad-hoc meetings to discuss operational issues held throughout the week.

The County Controller’s Office observed Mike Lupinacci reviewing the TSR reports from the database.

### III. Findings and Recommendations

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Each manager receives an email notification when a TSR is filed. A member of 9-1-1 management (and a corresponding back-up if the primary person responsible is not available) is assigned with completing the TSR via a matrix of responsibility. All members of 9-1-1 management have access to all TSR reports.

The ability to create custom reports will be a requirement as part of the RFP for Enhanced Maintenance for the entire 9-1-1 system. Once a new vendor is selected, this process should be able to provide 9-1-1 management with the custom reports they need to effectively monitor the TSR database. Per Diane DePalma, Assistant Chief Administration, the RFP process could take 6 to 9 months after the RFP is sent out to vendors. The Enhanced Maintenance RFP is currently in a draft form.

**Consultant's Finding # 4**

**(Finding Not Applicable per 1<sup>st</sup> Follow-Up Review)**

County management plays little if any role in assisting the 9-1-1 team in the decision making process. As such the relationship between the two teams is not as strong as it could be.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services management should play an active role in pre-contract activities for any large 9-1-1 center projects.

**Management's Prior Response**

We agree and up to this point have participated. Coordination of all contracts is in conjunction with the County Law Department. All request for proposals are developed in conjunction with the County's Purchasing Department. We follow the established County guidelines from the approval process of the County Manager's Office through the contract execution stage in the County Controller's Office. We will be glad to sit down with the Controller to see if there is a need for a change in the language of the contracts.

**1<sup>st</sup> Follow-up:**

**Status of Finding**

Not Applicable

**Current Status of Finding**

Not Applicable.

**Management's Prior**

**Response/Actions Taken**

A team has been put together for large pre-contract activities. At the table is the County Law Department solicitor, a buyer from purchasing, as well as mid-level and top level 9-1-1 administrative staff. We have met in this

### III. Findings and Recommendations

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format during several RFP proposal writings, interviews and selection process.

The language in the RFP, the contracts, and notification process are reviewed and approved by the purchasing and law department per the Chief Executive's RFP guidelines.

Per the County's Purchasing Division's policy, if an amendment to an existing contract is needed for either time, amount or both, they do not get involved. The contractor's submitted amendment changes, including the SOW, are submitted directly to the Solicitor in the Law Department. He reviews, recommends changes, and writes the amended contract.

**Consultant's Response  
to 9-1-1's Actions Taken**

The original intent of this recommendation was to engage the County Controller's office in large contracts in EMS. However, since the recommendation was misconstrued, no assessment of the 9-1-1 management team has been done; however, the 9-1-1 management team's response is reviewed.

The County 9-1-1 management team has assembled a team for large pre-contract activities. This team includes County Solicitor, Dennis Biondo. Diane DePalma in a meeting on 11/19/2007 stated that Dennis was responsible for the contractual language and review of the technical details within the Scope of Work. In a conversation with Dennis, it is clear that he feels he is not technically able to validate the content of the Scope of Work. He can only ensure that the document is written in the County's interest, and does not conflict with any prior or existing contractual agreements.

**Controller's Review  
of 9-1-1's Actions Taken**

Recommendation is not applicable. No further review is necessary.

**Consultant's Finding # 5**

The team failed to identify human error as the root cause of several incidents that culminated in the incident on October 25, 2006, and then failed to subsequently recommend service management as a key element of improving the quality of the 9-1-1 service.

### III. Findings and Recommendations

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**Consultant's Recommendation**      The Allegheny County 9-1-1 Division of Emergency Services should create a formal Problem Management team and should include Kimball and Associates, Embarq and County employees as its members. The system administrator and Embarq should provide significant resources to support this team.

**Management's Prior Response**      We agree and we do support the Problem Management team concept. Weekly meetings were conducted during the time period covered by this report. Actions were recorded by Kimball. Although not formally assembled by the definition of the recommendation, members of County 9-1-1 team, Kimball and Associates, and Embarq met consistently on the project development, developing strategies, and identifying issues and resolutions.

**1<sup>st</sup> Follow-up:  
Status of Finding**      Addressed and made attempt to change; but it is not what was recommended. Score: 2

**Current Status of Finding**      Partially implemented. Score: 3

**Management's Current  
Response/Actions Taken**      Every Monday there is a meeting conducted that includes the entire County 9-1-1 management team, including Quality Assurance and Training. Departmental issues are discussed at length and all members leave the meeting with individual action notes. Although these meetings are referred to as project meetings, the development of the Sentinel Patriot project affected the overall operation of the entire system.

Operational changes and maintenance are reported, logged-in and acted upon by County 9-1-1 management. These items are currently kept in a non-electronic format through the "Change Record 9-1-1 Network Log." The log identifies operational issues, who is going to perform the service, addresses the risk associated with the change/service, and when the change/service is going to be performed. On the date the change/service is performed, the log is signed off by all parties involved with the change/service including 9-1-1 management and the Embarq technician. The log is then scanned and a copy is sent to Embarq.

### III. Findings and Recommendations

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#### **Controller's Review of 9-1-1's Actions Taken**

The Controller's Office met with Diana DePalma, Assistant Chief Administration, and Jim Thompson, 9-1-1 Coordinator, to discuss the status of the Sentinel Patriot project. The Patriot system has been fully implemented as the County's 9-1-1 telephone solution as of April 29, 2009. County 9-1-1 now has moved to where management is issuing an Enhanced Maintenance RFP for the entire 9-1-1 system.

The weekly meetings, while entitled project meetings, were actually dual purpose meetings that covered both project implementation and operational issues during the life of the Sentinel Patriot project. These meetings were held every Monday. 9-1-1 management discusses both project and operational related issues, many of which are reported via the TRS. These reports are distributed electronically via email to all members of the 9-1-1 management team when executed. The meetings are still being held but the implementation of the Sentinel Patriot 9-1-1 solution has been implemented as of April 25, 2009.

Per Mike Lupinacci, Assistant 9-1-1 Communications Manager, there are also ongoing informal ad-hoc meetings to discuss operational issues held throughout the week.

Allegheny County Department of Emergency Services (DES) is currently in the process of preparing an Enhanced Maintenance RFP. As part of this process, 9-1-1 management will request that the vendor selected will automate the operational changes and maintenance log which is currently only kept in hardcopy format. Per Diane DePalma, Assistant Chief Administration, the RFP process could take 6 to 9 months after the RFP is sent out to vendors. The Enhanced Maintenance RFP is currently in a draft form.

#### **Consultant's Finding # 6**

Change Management was not implemented for any changes to the 9-1-1 system. As a result, human error allowed changes to the 9-1-1 system that were directly responsible for the incident of October 25<sup>th</sup> 2006.

#### **Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should implement a Change Management process and create a Change Management Board. The County is the overriding authority for the Change Management

### III. Findings and Recommendations

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Board, although the approving Change Manager could be a County employee or a designee of the County.

**Management's Prior Response**

We agree that changes to be made on a non-emergency basis to the system should go through an implemented change process to ensure that standardized methods and procedures are used to handle all changes to minimize the impact upon service. This has been occurring informally at the weekly "Wireless Phase II" implementation meetings. The County 9-1-1 team agrees in theory with the concept of change management. The County 9-1-1 team is very cautious with systemic change. Again, the County 9-1-1 team will reinforce to Embarq that no software or system changes are to be made without the direct authorization of the County 9-1-1 team and without the appropriate documentation.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Partially implemented. Score: 3

**Current Status of Finding**

Partially implemented. Score: 3

**Management's Current  
Response/Actions Taken**

County 9-1-1 management currently does not have an electronic database capable of collecting and storing the information from the "Change Record 9-1-1 Network Log." County 9-1-1 management is actively seeking an electronic solution to this as part of the Enhanced Maintenance RFP. 9-1-1 management believes that all changes are properly documented in the hand-written "Change Record 9-1-1 Network Log." In the event of an emergency, changes are made without being entered into the log first. In these instances, verbal approval is given by 9-1-1 management. Once the incident is over, the log is completed to reflect changes that were made.

**Controller's Review  
of 9-1-1's Actions Taken**

The Controller's Office reviewed the hard copy "Plant/CML Network and 9-1-1 Network" Activity Log and the Change Record. These documents appear to adequately record the daily maintenance and non-emergency basis changes. The Change Record forms and corresponding attachments appear to include all the information to adequately document the process described. The 9-1-1 Coordinator reviews and approves all Change Record forms. He ensures that the forms have been filled out correctly and completely. His authorization for the

### III. Findings and Recommendations

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form is indicated by his signature on the document. If an emergency change must be made, verbal approvals will be given by 9-1-1 management. After the emergency subsides, 9-1-1 management will document the emergency change on the "Change Record" form.

As part of Allegheny County's Department of Emergency Services RFP for enhanced system-wide maintenance, the vendor selected will be required to provide an automated solution to this process. Per Diane DePalma, Assistant Chief Administration, the RFP is still being drafted.

**Consultant's Finding # 7**

There were inadequate controls during testing that allowed a technician to make a change to the routing of thousands of unassigned numbers without removing the change when the testing was completed.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should implement a Release Management policy that clearly defines the changes to be made and gathers relevant resources to discuss the impacts and potential risks of any such work. Release Management should also independently verify (specifically not by the technician completing the change order) that the work is complete and accurate per the request.

**Management's Prior Response**

We agree with the concept of Release Management in that formalized documentation of approved sign offs and check lists of testing being done to the system should be adopted. We have provided guidance and feedback to the contractor on an informal basis but as per the recommendation we will formalize this process and develop policies that articulate that all discussions on issues, actions taken, and outcomes during testing periods will be reported in written format.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Addressed and made attempt to change, but it is not what was recommended. Score: 2

**Current Status of Finding**

Partially implemented. Score: 3

**Management's Current  
Response/Actions Taken**

As part of the Enhanced Maintenance RFP currently under development, Allegheny County 9-1-1 management

### III. Findings and Recommendations

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will require the vendor selected to offer a comprehensive solution to the Release Management process. This solution will have formalized documentation, appropriate controls, and comprehensive policies and procedures. 9-1-1 management will continue to use the “Change Management” process currently in place until the new system is developed by the vendor selected for the Enhanced Maintenance RFP. Change requests are now still documented on prepared sheets developed by the Department of Emergency Services 9-1-1 division called a “Change Record- Allegheny County 9-1-1 Network” and a draft SOG has been written defining the maintenance guidelines.

#### **Controller’s Review of 9-1-1’s Actions Taken**

The Controller’s Office obtained the most current draft of the Enhanced Maintenance RFP. The document requires the vendor selected to offer a comprehensive “Change Management” process. The requirements set forth by 9-1-1 management appears to comply with the Consultant’s recommendations once the RFP is implemented. However, per Diane DePalma, Assistant Chief Administration, the RFP process will take about 6 to 9 months once the RFP document is distributed.

#### **Consultant’s Finding # 8**

The incident caused all inter-selective router trunks to be full; no All Trunks Busy alarm was generated. This led to approximately 7 hours of degraded service, which for 217 users meant little or no service.

#### **Consultant’s Recommendations**

The Allegheny County 9-1-1 Division of Emergency Services should conduct a review of all desired thresholds to ensure that events that the County would deem service-impacting are configured within the system to generate alarms. A major alarm value is assigned to any “All Trunks Busy” condition. A minor alarm value is assigned to any trunk group that exceeds 75% capacity.

#### **Management’s Prior Response**

We agree with the assumption that we should have as many system alarms/alerts that is technologically available for the security and safety of system. We recognize that there are several systems critical to our operation that should have this technology incorporated into the product but it just does not exist. All trunks busy alarms would have been helpful in this scenario if available. This technology was not available at the time of the incident. Since the

### III. Findings and Recommendations

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incident the vendor has developed and installed software that provides an alarm safe guard.

**1<sup>st</sup> Follow-up:**

**Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Management's Current  
Response/Actions Taken**

Monitoring of Performance Measurements to user defined thresholds will be a requirement for the Enhanced Maintenance RFP. The Sentinel Patriot System has been conditionally accepted and fully implemented as of April 25, 2009. Embarq performs remote monitoring.

**Controller's Review  
of 9-1-1's Actions Taken**

The Controller's Office obtained the draft RFP for Enhanced Maintenance Services. Section 7.2.1 of the draft RFP covers proactive performance monitoring of the system using user-defined thresholds that meet service requirements.

Per James R. Thompson, 9-1-1 Coordinator, this solution should be ready to be implemented sometime this month. The alarm thresholds are being developed by QAES. There will be 4 thresholds (1-4) with 1 being the most severe (a major outage requiring immediate service) and 4 being a billable service (e.g. non-emergency software upgrades). As of the date of this review, the solution has not been implemented so it could not be reviewed by the Controller's Office.

**Consultant's Finding # 9**

There is no reporting provided to the County regarding availability of the system. As such, no trend analysis of failures or any preventative maintenance can be usefully performed, since there is no historical data to review.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should instruct Embarq to provide, at a minimum, on a quarterly basis, a report containing information regarding availability. Typically these reports include major and minor alarms received in the reporting period; any scheduled changes or outages; Mean Time between Failures and Mean Time to Repair calculations; trend analysis and so on. These reports can be designed by a third party and agreed upon by Embarq.

### III. Findings and Recommendations

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<b>Management's Prior Response</b>	<p>We agree with the finding. This is being done but needs to be more formalized. The County 9-1-1 team documents calls for service via a TSR. Trends and repeat scenarios have been identified through follow up. There is consistent interaction between Embarq and the County 9-1-1 teams with regard to all upgrades, releases, fixes and bugs with the technician. There are also standing orders refusing all release upgrades until fully tested and proven that our systems will handle these changes.</p>
<b>1<sup>st</sup> Follow-up: Status of Finding</b>	<p>No changes being made. Score: 0</p>
<b>Current Status of Finding</b>	<p>Partially implemented. Score: 1</p>
<b>Management's Current Response/Actions Taken</b>	<p>Allegheny 9-1-1 Management will require the vendor selected as part of the Enhance Maintenance RFP to provide reporting capabilities such as major and minor alarms received in the reporting period; any scheduled changes or outages; Mean Time Between Failures and Mean Time To Repair calculations; trend analysis and any other custom reports that management deems valuable in monitoring the day-to-day operations of the 9-1-1 Center.</p>
<b>Controller's Review of 9-1-1's Actions Taken</b>	<p>The Controller's Office obtained the current draft of the Enhanced Maintenance RFP. The document requires the vendor selected to offer a comprehensive automated monthly report on network performance.</p> <p>James R. Thompson, 9-1-1 Coordinator, monitors the hand written "Daily Activity Log" on an ongoing basis. Mr. Thompson met with Embarq's Operation Manager on June 17, 2009 to discuss Embarq entering non-project items into the 'QAES' computer based format once one is adopted rather than the handwritten log. Embarq has agreed to enter information into an electronic format when a new solution is adopted. This will be a requirement as part of the RFP for Enhanced Maintenance for the entire 9-1-1 system. Once a new vendor is selected, this process will be fully automated.</p> <p>Currently, Chief Full has access to all TSRs that are entered into the system. He is on the email notification distribution list. TSRs are discussed during the weekly 9-1-1 management meeting that is held every Monday. A</p>

### III. Findings and Recommendations

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management report on TSRs will be one of the custom reports that will be required as part of the RFP for Enhanced Maintenance.

**Consultant's Finding # 10**

A regular Business Continuity Disaster Recovery plan should be implemented to test 9-1-1 personnel in their readiness for an event. Though it requires additional staffing, to provide quality 9-1-1 service and simulate an emergency situation, it is feasible to conduct these simulations on a bi-annual basis.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should simulate a Business Continuity Disaster Recovery incident at least once a year and preferably twice a year. The event must be coordinated to ensure that 9-1-1 service is not impacted but does require the relocation of some 9-1-1 personnel.

**Management's Prior Response**

The Allegheny County 9-1-1 Division does have a Continuity Disaster Recovery Plan. We agree that the Plan needs to be exercised and we are working towards that goal.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Addressed and made attempt to change, but it is not what was recommended. Score: 2

**Current Status of Finding**

Fully implemented. Score: 5

**Management's Current  
Response/Actions Taken**

Allegheny County 9-1-1 Management conducted a BCDR event in 2008. One will be scheduled for 2009.

**Controller's Review  
of 9-1-1's Actions Taken**

9-1-1 management provided the County Controller's office with documentation of the BDCR event that took place on May 13, 2008. The BCDR took place at 3:00 a.m., the least busy time of the day for the 9-1-1 center.

The BCDR document broke out each test, anticipated result, risks, sequence of events to execute the simulation and description of the results of the event, including the results. This document was signed off by James Thompson, 9-1-1 Coordinator and Michael Lupinacci, 9-1-1 Operations Manager.

### III. Findings and Recommendations

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Per discussions with 9-1-1 management, a BCDR event will take place later in 2009 but has not yet been scheduled. 9-1-1 management also believes that the upcoming G-20 international event that is being held in Pittsburgh will be an excellent test of the capabilities of the 9-1-1 system.

Based on the documentation received and the interviews performed by the Controller's Office, it appears that 9-1-1 management has met all the requirements set forth by the consultant with regards to executing an annual BCDR event.

**Consultant's Finding # 11**

**(Fully Implemented during 1st Follow-Up Review)**

No backups are stored off-site in the event of a total system failure at one of the locations.

**Consultant's Recommendation**

Should complete failure of a device in the system occur, the redundancy should allow service to resume with little or minimal impact. However, to restore the failed system a full configuration reload may be needed. Depending on the type of failure it may not be possible to retrieve the configuration from the failed device. Off-site secure backups are a standard part of any IT service organization and require little investment of time and resources.

**Management's Prior Response**

Off-site redundancy is in place at Railroad Street as per the Continuity Disaster Recovery Plan. The County 9-1-1 team agrees that a secure backup is a "must" in an IT environment. We will consult with the Department of Computer Services to explore if additional backup systems need to be employed.

**Prior and Current:  
Status of Finding**

Fully implemented. Score: 5

**Actions Taken**

All our servers are backed up by the Police/Emergency Services IT employees and stored in a fire resistant vault. They are also working to find a permanent off site location to store the back up data.

**Consultant's Response  
to 9-1-1's Actions Taken**

Embarq has agreed to complete a regular backup (on a scheduled basis and before/after major software changes) of the EC500 and confirmed that Plant/CML would backup all configurations on the new hardware on a scheduled basis; this meets the goal of the recommendation. It should

### III. Findings and Recommendations

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be validated by the County that these are available as part of a BCDR procedure.

**Controller's Review  
of 9-1-1's Actions Taken**

Fully Implemented. No further review is necessary.

**Consultant's Finding # 12**

In agreement with the Event Report issued by Kimball and Associates, a preventative maintenance plan should be implemented. This involves checking all aspects of the technical system which consider testing items such as power, grounding, cabling, documentation, backups on a defined schedule, and at least once a year.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should define a maintenance plan for all areas of the system and testing these as fully as possible. The Embarq contract has a clause providing the County with one preventative maintenance visit per year, for the duration of the contract. The County should carefully develop a testing plan and issue this to Embarq to be completed within the scope of the maintenance.

**Management's Prior Response**

Testing and diagnostics are performed almost daily on the system by the Embarq technicians. Embarq frequently consults with Plant/CML who does assist remotely when needed. We will reinforce to Embarq that a written scheduled plan needs to be identified and written documentation provided to the County 9-1-1 team on all maintenance testing. We will create a system of check lists to ensure that these activities are done per the maintenance contracts.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Addressed, but no action taken for the new technology being deployed. Score: 1

**Current Status of Finding**

Addressed, but no action taken for the new technology being deployed. Score: 2

**Management's Current  
Response/Actions Taken**

County 9-1-1 management will require the vendor selected under the Enhanced Maintenance RFP to define a comprehensive preventative maintenance schedule for the 9-1-1 system.

### III. Findings and Recommendations

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**Controller's Review  
of 9-1-1's Actions Taken**

The Controller's Office obtained the most current draft of the Enhanced Maintenance RFP. The document requires the vendor selected to describe preventative maintenance activities that will be included as part of the new maintenance services addressed in response to this RFP. Vendors must address how preventative maintenance will be handled and the frequency of preventative maintenance activities."

The Controller's Office did not do any further testing as the Enhanced Maintenance RFP has not yet been implemented.

**Consultant's Finding # 13**

No contract exists between the County and Embarq to ensure that the state law of answering 90% of calls in ten seconds is met or exceeded. An amendment to the contract can be drafted and presented to Embarq.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should enforce a contract between the County and Embarq to ensure Embarq's response times are in compliance with state law. This is defined as an underpinning contract.

**Management's Prior Response**

The County 9-1-1 team assures that we are in compliance with the requirement of the State Law governing 9-1-1. The law that is referenced in this recommendation applies to the training of Telecommunication Operators and staffing levels. The network design does meet legislative standards.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Management's Current  
Response/Actions Taken**

County 9-1-1 management will require the vendor selected under the Enhanced Maintenance RFP to define a comprehensive preventative maintenance schedule for the 9-1-1 system.

**Controller's Review  
of 9-1-1's Actions Taken**

The Controller's Office obtained the most current draft of the Enhanced Maintenance RFP. The document requires the vendor selected to describe preventative maintenance

### III. Findings and Recommendations

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activities that will be included as part of the new maintenance services addressed in response to this RFP. Vendors must address how preventative maintenance will be handled and the frequency of preventative maintenance activities.

**Consultant's Finding # 14**

Currently Kimball and Associates charges a lump sum fee for consultancy and project management. There is no time-related incentive for Kimball and Associates to close out any projects. Additional charges may be assessed if a delay occurs in which additional resources are required to complete the project.

**Consultant's Recommendation**

The Allegheny County 911 Division of Emergency Services should engage Kimball and Associates on a fixed-based fee basis with time-based penalties for missing milestones.

**Management's Prior Response**

This contract was entered into on a "Task Based/ Lump Sum" format due to the complexity of the Wireless Implementation Plan and uncharted documentation as to knowing the extent of time, effort, and resources needed during the implementation process. By consulting with and having the Law Department draft the contract this contract method was used and went through the County approval and execution process of all contracts. Because of the special nature of this project we feel we followed the appropriate decision making process in identifying that a Lump Sum Task Base contract was the most cost effective way to implement 9-1-1 wireless.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Fully implemented. Score: 5

**Management's Current  
Response/Actions Taken**

Allegheny County 9-1-1 Management met with Kimball & Associates to discuss the structure of the billing for services rendered to the County. Kimball & Associates agreed to change its billing structure to conform to the recommendations of the Consultant.

**Controller's Review  
of 9-1-1's Actions Taken**

The County Controller's Office received copies of recent invoices from Robert Kimball & Associates. We reviewed

### III. Findings and Recommendations

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these contracts in order to ensure that there was adequate disclosure as to the tasks performed and the amount billed for each task. The invoices disclosed the following information:

- Name of the consultant performing the task;
- The date the task was performed;
- The number of hours the task was performed on that date;
- The hourly rate for the consultant; and
- Where applicable, a brief detailed description of the task that the County is being billed.

**Consultant's Finding # 15**

There is no threshold warning for any call that is in queue and unanswered for a pre-defined amount of time.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should implement controls such that when a call is in queue for more than 5 minutes without being answered, an audible/visual warning is provided to the Shift Commander.

**Management's Prior Response**

The County 9-1-1 team agrees with early warning signals. A number of systems in the 9-1-1 center did not have this technology available from the company at the time of the incident. Based on this incident and working with the County 9-1-1 team the company has developed a software package that now provides early warning notifications. We are examining the availability of early warning signal technology for other existing systems in 9-1-1.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Management's Current  
Response/Actions Taken**

There are 2 methods in which this is occurring:

1. When a call rings for more than 20 seconds the call transfers automatically to another Zone
2. In Central Zone there are audible warnings that TCO's and Shift Commanders hear when a call is in queue.

### III. Findings and Recommendations

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Based on this incident and working with the vendor some early warnings have been added while other areas of warning remain in development. The Patriot System does provide this feature when a call is in queue for delivery to a call take position. Shift Commanders are now monitoring anomalies based on the Patriot System on their computers in the Central Zone where it has been deployed. In the last follow-up report (dated November 28, 2008), the following statement was made "Once full deployment and acceptance of the system is complete plasma screens will be installed which will be dedicated to visual monitoring of the system." Per James Thompson, 9-1-1 Coordinator, the installation of these additional screens will now be done as part of the Computer-Aided Dispatch (CAD) project.

Allegheny County 9-1-1 Management will require the vendor selected under the Enhanced Maintenance RFP to define a comprehensive performance monitoring solution for the 9-1-1 system.

#### **Controller's Review of 9-1-1's Actions Taken**

Allegheny County 9-1-1 Management has requested a proactive performance monitoring system with user-defined thresholds that meet the criteria set forth by 9-1-1 management as part of the Enhanced Maintenance RFP. The Controller's Office did not do any further testing as the Enhanced Maintenance RFP has not yet been implemented.

#### **Consultant's Finding # 16**

There is no threshold warning for any call that is answered and not cleared for a pre-defined amount of time. The rogue call that caused the incident on October 25, 2006 remained in the Selective Routers for almost 7 hours.

#### **Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should develop a threshold warning that allows PSAP personnel to determine if a call has been answered but not cleared or disconnected after a pre-defined amount of time. There may be a logical reason why a call can be left open for more than 60 minutes. However a notification to the Shift Commander would allow that call to be reviewed and a decision made on whether the call is legitimate or invalid and can be disconnected.

#### **Management's Prior Response**

The County 9-1-1 team agrees with early warning signals. A number of systems in the 9-1-1 center did not

### III. Findings and Recommendations

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have this technology available from the company at the time of the incident. Based on this incident and working with the County 9-1-1 team the company has developed a software package that now provides early warning notifications. We are examining the availability of early warning signal technology for other existing systems in 9-1-1.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Management's Current  
Response/Actions Taken**

Based on this incident and working with the vendor some early warnings have been added while other areas of warning remain in development. The Patriot System does provide this feature when a call is in queue for delivery to a call take position. Shift Commanders are now monitoring anomalies based on the Patriot System on their computers in the Central Zone where it has been deployed. In the last follow-up report (dated November 28, 2008), the following statement was made "Once full deployment and acceptance of the system is complete plasma screens will be installed which will be dedicated to visual monitoring of the system." Per James Thompson, 9-1-1 Coordinator, the installation of these additional screens will now be done as part of the Computer-Aided Dispatch (CAD) project.

Allegheny County 9-1-1 Management will require the vendor selected under the Enhanced Maintenance RFP to define a comprehensive performance monitoring solution for the 9-1-1 system.

**Controller's Review  
of 9-1-1's Actions Taken**

Allegheny County 9-1-1 Management has requested a proactive performance monitoring system with user-defined thresholds that meet the criteria set forth by 9-1-1 management as part of the Enhanced Maintenance RFP. The Controller's Office did not do any further testing as the Enhanced Maintenance RFP has not yet been implemented.

**Consultant's Finding # 17**

Kimball and Associates has stated in the County's Event Report that the design is mirrored between Lexington Street (Point Breeze) and Railroad Street (Strip District). This statement is misleading. The Data Base Management System is a single point of failure since it exists only at

### III. Findings and Recommendations

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Lexington Street; the failure of which will result in mismatches of Automatic Number Identification and Automatic Location Identification information in a matter of hours. It should be noted that the Data Base Management System has fault-tolerant hardware inherent in the server, but the Data Base Management System is not redundant.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should develop a budget for the procurement and implementation of a backup Data Base Management System to be placed in Railroad Street (Strip District).

**Management's Prior Response**

The 9-1-1 team believes that backup of the database is sufficient to meet the needs of redundancy. The ALI Database service is duplicated at Railroad St. We will analyze the possibility and need for any other duplication component of the system with the Department of Computer Services.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Fully implemented. Score: 5

**Management's Current  
Response/Actions Taken**

Allegheny County 9-1-1 has entered into a 3 year warranty period as of April 25, 2009 with Embarq for the Datamater DBMS product. Under this agreement, Embarq must meet service response times. The system is located at Railroad Street and backs up the system at Lexington but they work independently of each other.

The phone companies are also a form of redundancy in retrieving the data base information. This information is retrievable from the local exchange carrier (LEC) and the competitive local exchange carrier (CLEC). Information/records that are pulled down from the LEC and CLEC are to be "scrubbed" by the 9-1-1 data base employees. These records are then transferred back with the corrections to the LEC and CLEC. Therefore they are retrievable from this source also.

**Controller's Review  
of 9-1-1's Actions Taken**

The County 9-1-1 management team in their response detail that the Datamaster DBMS platform is sufficient to meet the needs of redundancy, and that additionally the carriers form a further level of redundancy. Since this

### III. Findings and Recommendations

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would only be leveraged on complete failure of the DBMS in Point Breeze, it is acceptable that this goal is met. The Controller also reviewed the current purchase agreement for the Datamaster DBMS. The additional contractual service guarantees also appear to enhance the sufficiency of the redundancy of the system. It appears that the redundancy recommendations made by the consultant with regards to the Datamaster DBMS application have been satisfied.

**Consultant's Finding # 18**

**(Fully Implemented during 1<sup>st</sup> Follow-Up Review)**

Items such as power cords, power circuits, and cables are not marked consistently. As such a technician with no or little familiarity with the system would need to spend time becoming accustomed with the physical configuration. In an outage or troubleshooting event, the layout must be simple to follow to ensure speed and accuracy of any fault-finding. The technician sits in the room, amidst cabling and equipment. This room should not be used as general office space.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should relocate the Embarq technician to another location. Access to the room must be restricted to be used only when working on the equipment in the room.

**Management's Response**

We disagree with this finding. This room is not used as "general office" space. This is the technician's work environment from which he accesses the system and conducts his business. Access is controlled based on security swipe cards with limited access to this area.

**1<sup>st</sup> Follow-Up:  
Status of Finding**

Fully implemented. Score: 5

**Current Status of Finding**

Fully implemented. Score: 5

**Actions Taken**

See consultant's response below.

**Consultant's Response  
to 9-1-1's Actions Taken**

The Wireless Phase II project has reduced the overall footprint of the equipment in Point Breeze and subsequently the desk in the equipment room is not to be situated next to 9-1-1 operating equipment. As such, the goal of this recommendation is met, assuming protocols

### III. Findings and Recommendations

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such as no food/drink in the equipment room are fully observed.

**Controller's Review  
of 9-1-1's Actions Taken**

Recommendation implemented during 1<sup>st</sup> follow-up. No further review is necessary.

**Consultant's Finding # 19**

In Section 5.14 PSAP Status Indicators, National Emergency Number Association ("NENA") requires the Public Safety Answering Points to support both audio and visual indicators for trunk status. This is not present for the inter-selective router tandem trunks.

Additionally, Section 8.2 covers the requirement for periodic maintenance, and the requirement for an established maintenance program. Kimball and Associates confirmed this has not been provided by Embarq.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should comply with Section 5.14 and Section 8.2 of the standards set forth by the National Emergency Number Association.

**Management's Prior Response**

The above mentioned NENA standards do not apply to the inter-selective router tandem trunks (equipment behind the scene). The standards are applicable to the equipment for the TCO Call Taking position. Therefore, we do comply with these NENA standards. We do agree that indicators and standards should be established for the inter-selective router tandem.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Management's Current  
Response/Actions Taken**

The standards reference calls for audible and visual alert to the call taker when a call is presented on a 9-1-1 trunk. This is present on all call take positions. This indicator to the call taker is not related to inter-selective router trunks. One of the objectives of the RFP is to develop monitoring and alarm capabilities on the network which would send alarms to an alarm point of some type.

**Controller's Review  
of 9-1-1's Actions Taken**

Allegheny County 9-1-1 management is requesting a proactive performance monitoring system with user-

### III. Findings and Recommendations

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defined thresholds that meets the service levels defined in the Enhanced Maintenance RFP document. Reports on the network performance will be requested on a monthly basis. Once the RFP is finalized another review should be done to make sure that the new performance standards comply with sections 5.14 and 8.2 of the NENA standards. The Controller's Office did not do any further testing as the Enhanced Maintenance RFP has not yet been implemented.

**Consultant's Finding # 20**

Embarq has offered a 25% discount on the Cisco equipment provided. This is not a competitive discount when considering the Cisco equipment alone and is certainly not competitive when considering the whole project value is \$2.9M.

The County is also being charged maintenance by Embarq on spares that the County procured to ensure rapid replacement in the event of failure. This annual cost of maintenance represents 19% of the value of procuring the equipment. In essence, over the 5-year period, the County would have spent close to \$140,000 on maintaining equipment that may not be used in the production environment. This equates to almost 100% of the value of the equipment in maintenance charges. It is an inappropriate practice to extend maintenance to equipment that is procured for the purpose of providing on-site spares.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should require Embarq to re-price the existing maintenance contract to exclude maintenance of critical spares. This represents a cost savings of \$140,000 over 5 years.

**Management's Prior Response**

The County 9-1-1 team is willing to discuss and review with the Controller's Office and the County Purchasing Department on how to accomplish this recommendation under the existing contract.

**1<sup>st</sup> Follow-up:  
Status of Finding**

No changes being made. Score: 0

**Current Status of Finding**

Not Applicable. No changes were made. However, due to the passage of time, this recommendation is no longer applicable.

### III. Findings and Recommendations

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#### **Management's Current Response/Actions Taken**

At the time of the implementation of the Sentinel Patriot System, 9-1-1 management believed it was an extreme risk to change the provision of 9-1-1 service to the citizens of Allegheny County. 9-1-1 management believed that the risk of a contract negotiation during the middle of the Phase II wireless implementation outweighed any financial benefit.

The Sentinel Patriot System has been fully deployed and the maintenance agreement has been converted into a warranty agreement as of April 25, 2009.

9-1-1 Management believes that they are in a better position to negotiate with vendors for the Enhanced Maintenance RFP. 9-1-1 Management will work with the County's Purchasing and Law Departments to ensure that the RFP is correct with regards to County and legal standards.

#### **Controller's Review of 9-1-1's Actions Taken**

A new vendor will be selected as part of the Enhanced Maintenance RFP. Now that the Sentinel Patriot system is implemented, it gives the County more time to negotiate contracts. The ECS contract has been eliminated and new vendor contracts will be discussed and reviewed once the Enhanced Maintenance RFP is completed.

#### **Consultant's Finding # 21**

The County is paying \$89,489 to procure surveillance equipment to allow monitoring of the 9-1-1 system, a further \$32,035 in maintenance of that surveillance equipment over the 5 year period, and then almost \$1.3M in maintenance charges over the 5 year period. In essence, the County is paying for the equipment to allow Embarq to monitor the 9-1-1 system; the County is paying maintenance on the equipment that allows the monitoring of the 9-1-1 system and then pays Embarq for maintenance of the 9-1-1 system. This is an exceptionally poor practice, and in simple terms can be defined as double-dipping.

Additionally, Embarq has extended to the County a 'Customer Appreciation Discount' on its annual maintenance price. This equates to 3%. Coupled with the value of the projects previously completed by Embarq and previous maintenance contracts, this is an exceptionally poor value to the County and its constituents.

### III. Findings and Recommendations

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**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should require Embarq to sign a master agreement stating in writing the value of any service, product or maintenance discounts to be used over a pre-defined period of time. It should be accepted that any purchase of services, product or maintenance is offered to the County at the set, agreed discounts. These discounts must be agreed upon by the County and Embarq and reflect the level of expenditure during past years and expected over the coming years of the contract.

**Management's Prior Response**

The County 9-1-1 team is willing to discuss and review with the Controller's Office and the Law Department on how to accomplish this recommendation.

**1<sup>st</sup> Follow-up:  
Status of Finding**

No changes being made. Score: 0

**Current Status of Finding**

Not Applicable. No changes was made. However, due to the passage of time, this recommendation is no longer applicable.

**Management's Current  
Response/Actions Taken**

Because of the risk factor and to ensure the continuity of operations of the 9-1-1 system, County 9-1-1 management was not able to terminate or re-negotiate the terms and conditions of the Embarq contract at the time of the original review. 9-1-1 management needed to take a holistic approach in the implementation of the Sentinel Patriot System. They could not piecemeal components, connectivity or services. The system was a design and build solution by Embarq.

Going forward, the Patriot Sentinel System is under warranty until April 2011 under the maintenance agreement with Embarq. After that date, DES will work in conjunction with the County Law and Purchasing Departments to insure that replacement equipment will be purchased under the then current available contracting pricing schedules negotiated by the County. 9-1-1 management will ensure that equipment pricing is separated from the development and design of the 9-1-1 solution.

**Controller's Review  
of 9-1-1's Actions Taken**

A new vendor will be selected as a result of the Enhanced Maintenance RFP. Now that the Sentinel Patriot system is

### III. Findings and Recommendations

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implemented, it gives the County more time to negotiate contracts. The ECS contract has been eliminated and new vendor contracts will be discussed and reviewed once the Enhanced Maintenance RFP is completed.

#### **Consultant's Finding # 22**

The pricing for ECS summarizes a gross discount of \$534,578. However closer review of this quote reveals that \$273,097 is for trade-in value; this is not a discount provided by Embarq. It appears that Embarq has incorrectly represented the discount value of the ECS quote. The Special Incentive Discount represents \$261,481 of the ECS quote, an 18% discount from the ECS unit pricing, or a mere 9% of the project total.

Embarq is billing the County 260 days of service for the wireless project, at a cost of \$362,666. Transportation and living expenses for those services totals \$239,050. This represents nearly \$1,000 per day for services completed. If Embarq is unable to staff this project with local resources, serious concern exists about their ability to maintain this project. This issue should have been reviewed during contract negotiations and highlighted by Kimball and Associates.

The County is also being charged \$1,684 for a Windows 2000 5-client license. While it was not possible to verify the pricing of this based on 2005 prices, the current retail price for this product is \$999. Embarq has not discounted this product for the County. It is also not leveraging volume discounts that the County should have in place.

Embarq is charging \$446.18 for an off the shelf modem. The County purchased 16 modems; these are freely available at much lower prices.

Embarq has quoted Cisco equipment with only 1 year of SMARTNet – Cisco's support offering – and on an 8-5 Next Business Day model; Embarq has not provided an adequate design and may not be able to fulfill its obligation of replacement Cisco parts should the need arise.

#### **Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should purchase products through a centralized point of contact, or at a minimum have interaction with a centralized procurement team to ensure the best possible

### III. Findings and Recommendations

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price is being offered and the best value is driven from agreements the County already has in place.

**Management's Prior Response**

The 9-1-1 team adheres to County standards and policies and works with the Purchasing Department and Law Department on all our contracts/purchases. This contract did go through the negotiating process for this amendment. The original proposal from Embarq was for 3.9 million. Through negotiated discounts we received the system upgrade at a cost of 2.9 million. We made a recommendation and worked with the Law Department to amend the existing contract with Embarq that was then approved and fully executed through the County system.

**1<sup>st</sup> Follow-up:  
Status of Finding**

No changes being made. Score: 0

**Current Status of Finding**

Partially Implemented. Score: 2

**Management's Current  
Response/Actions Taken**

At the time of the initial review, Allegheny County Department of Emergency Services needed an "engineer's solution" with regards to the implementation of the Sentinel Patriot 9-1-1 solution. There needed to be a fully integrated relationship between the development of the system, services and equipment. It was not possible during the implementation phase of the project to separate a designed built system. Allegheny County DES personnel believed it would have been detrimental to the public safety needs of the citizens of Allegheny County to renegotiate the contract before the Sentinel Patriot System was fully implemented.

The Sentinel Patriot System is now under the 3-year warranty period as of April 25, 2009. All equipment covered under warranty during this period is covered under its replacement value.

As we move forward, Allegheny County DES will be working with the County's Purchasing Department to ensure that we utilize all existing contracts and work to get the best value for the County.

**Controller's Review  
of 9-1-1's Actions Taken**

All equipment for the Sentinel Patriot system is currently under warranty as of April 2009. Once the warranty period ends in 2011, 9-1-1 management has stated

### III. Findings and Recommendations

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that the appropriate actions will be taken to make sure the 9-1-1 center gets the best value from vendors for hardware and software purchases related to the Sentinel Patriot system. 9-1-1 management has also agreed to work with the purchasing department to ensure the best value as well as utilize all existing contracts.

**Consultant's Finding #23**

The maintenance agreement provided by Embarq, entitled "Sprint Centurion Service Product Annex", is a standard template for Sprint services and support and in general is not well suited to the support and maintenance that should be provided to the County.

The expectation of the County is that all work related to the ECS-1000 including new trunk turn up, configuration changes for CAD workstations, etc. is included within the scope and cost of the contract. This is not reflected in any contract that was provided to Combest during this review.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should review the responsibilities and activities it expects Embarq to complete on a daily basis and provide this assessment to Embarq to quote against.

**Management's Prior Response**

The Centurion standard maintenance agreement was reviewed and modified by the Law Department in the existing addendum. We will review this with the Law Department and Controller's office for any additional modification that would need to be included in any renegotiated or future agreements.

**1<sup>st</sup> Follow-up:  
Status of Finding**

No changes being made. Score: 0

**Current Status of Finding**

Partially Implemented. Score: 2

**Management's Current  
Response/Actions Taken**

At the time of the initial review, Allegheny County Department of Emergency Services needed an "engineer's solution" with regards to the implementation of the Sentinel Patriot 9-1-1 solution. There needed to be a fully integrated relationship between the development of the system, services and equipment. It was not possible during the implementation phase of the project to separate a designed built system. Allegheny County DES personnel believed it would have been detrimental to the public safety needs of the citizens of Allegheny County to renegotiate

### III. Findings and Recommendations

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the contract before the Sentinel Patriot System was fully implemented.

The Sentinel Patriot System is now under the 3-year warranty period as of April 25, 2009. All equipment covered under warranty during this period is covered under its replacement value.

As we move forward, Allegheny County DES will be working with the County's Purchasing Department to ensure that we utilize all existing contracts and work to get the best value for the County.

#### **Controller's Review of 9-1-1's Actions Taken**

All equipment for the Sentinel Patriot system is currently under warranty as of April 2009. Once the warranty period ends in 2011, 9-1-1 management has stated that the appropriate actions will be taken to make sure the 9-1-1 center gets the best value from vendors for hardware and software purchases related to the Sentinel Patriot system. 9-1-1 management has also agreed to work with the Purchasing Department to ensure the best value as well as utilize all existing contracts.

Per Diane DePalma, Assistant Chief Administration, contracts that require technical expertise are now reviewed by a committee of 9-1-1 management (and other knowledgeable employees) prior to the execution of the contract. The members of this committee are selected based on their technical knowledge and in-depth understanding of the processes involved to ascertain if the contract is sound from a technical standpoint only. Allegheny County Legal Department reviews the contract for legal soundness and in to ensure the contracts' language reflects the current standards in use by the county.

#### **Consultant's Finding #24**

##### **(Finding Not Applicable per 1<sup>st</sup> Follow-Up Review)**

The maintenance agreement does not include a provision for on-site personnel during core operating hours. Embarq is currently providing this service "without charge" – though this makes the current maintenance agreement very expensive. Embarq is not contractually obliged to provide this service and may stop at any time. The contract has verbiage for only 24x7 remote support. The busy hours for 9-1-1 are between 3 p.m. and 7 p.m. on any day of the

### III. Findings and Recommendations

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week. The ‘without charge’ technician when on-site leaves at 5 p.m.

**Consultant’s Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should review the value that the Embarq on-site personnel add to the maintenance agreement and arrange a contract addendum formalizing Embarq’s placing personnel on-site, defining their hours, roles and responsibilities.

**Management’s Prior Response**

We will explore the possibility of this option under the current agreement. We will perform a cost benefit analysis to see if this option should be renegotiated.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Not Applicable

**Current Status of Finding**

Not Applicable

**Management’s Current  
Response/Actions Taken**

The current maintenance agreement with Embarq encompasses the availability of technicians 24hrs x 7 days a week and while a formal analysis has not been conducted it is known in the industry of continuous operations, 24/7, 365 days a year this recommendation would require 4.2 persons to provide the suggested coverage. The financial ramifications of the suggestion in relation to the known system failure rate would be difficult to be justified.

**Controller’s Review  
of 9-1-1’s Actions Taken**

This recommendation was made on the assumption that Embarq is not contracted to have an on-site technician. Through discussion of the original findings report, it has been made clear by the County Controller’s Office that this is grand-fathered into the current support contract, and is indeed a contracted deliverable from Embarq.

**Consultant’s Finding #25**

Section 6.3 of the Sprint Centurion Service Product Annex specifically denotes that should the County procure monitoring equipment, Embarq will maintain the monitoring equipment at no additional cost to the County. Embarq is charging the County \$6,407 per year for maintaining the monitoring equipment. This is a direct conflict to the stated and agreed terms between Embarq and the County.

### III. Findings and Recommendations

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<b>Consultant's Recommendation</b>	The Allegheny County 9-1-1 Division of Emergency Services should seek reimbursement for all maintenance fees associated with monitoring equipment. This represents a cost saving of \$32,035 over 5 years.
<b>Management's Prior Response</b>	The County 9-1-1 team will review the language of the contract referenced by the consultant and take appropriate action with the recommendation of the Law Department and Controller's Office.
<b>1<sup>st</sup> Follow-up: Status of Finding</b>	No changes being made. Score: 0
<b>Current Status of Finding</b>	Not Applicable
<b>Management's Current Response/Actions Taken</b>	See Controller's Review below.
<b>Controller's Review of 9-1-1's Actions Taken</b>	The original Embarq contracts included lump sum maintenance prices and were not itemized. It covered all monitoring equipment listed in "Exhibit A" of the contract. This equipment is property of Allegheny County DES. The statement referring to no additional charges for the monitoring of customer owned equipment was not effective until the implementation of the Sentinel Patriot system. The Sentinel Patriot System has been conditionally accepted, fully implemented, and the 3-year warranty period started on April 29, 2009. Embarq is not billing for maintenance now that the system is under warranty.
<b>Consultant's Finding #26</b>	The agreement contains a termination clause only for Embarq, not for the County. The County is entitled to termination under the Standard Terms and Conditions (#193876v2) based on material failure. This will only occur thirty days after Embarq receives a termination notification from the County.
<b>Consultant's Recommendation</b>	Since Embarq has failed to provide a quality service, the Allegheny County 9-1-1 Division of Emergency Services should terminate the current support agreement. Additionally, it should negotiate more stringent and favorable contract terms to include on-site personnel during core operating hours (or busy hours) and a maintenance agreement tailored to the 9-1-1 services. It should not procure a generic maintenance agreement used by Embarq. The contract should include renewed pricing which reflects

### III. Findings and Recommendations

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the levels of service required by the County, including the purchase of critical spares to assist in maintenance of the 9-1-1 services.

**Management's Prior Response**

The agreement does include a termination clause for the County. This recommendation will be taken under consideration and addressed after further discussions with the Law Department and the Controller's Office.

**1<sup>st</sup> Follow-up:**

**Status of Finding**

No changes being made. Score: 0

**Current Status of Finding**

Partially Implemented. Score: 2

**Management's Current Response/Actions Taken**

At the time of the initial review, Allegheny County Department of Emergency Services needed an "engineer's solution" with regards to the implementation of the Sentinel Patriot 9-1-1 solution. There needed to be a fully integrated relationship between the development of the system, services and equipment. It was not possible during the implementation phase of the project to separate a designed built system. Allegheny County DES personnel believed it would have been detrimental to the public safety needs of the citizens of Allegheny County to renegotiate the contract before the Sentinel Patriot System was fully implemented.

**Controller's Review of 9-1-1's Actions Taken**

Allegheny County 9-1-1 Management will work with the Law Department to ensure that there is a termination clause in the contract for the Enhanced Maintenance RFP once a vendor is selected. Contract was not terminated or amended with Embarq.

**Consultant's Finding #27**

From the documentation provided to Combest, it is not clear whether the County has approved quotation 5001-02. However, this quote has been reviewed and observations are detailed below.

Embarq quotes \$581,559 of installation services, travel and living expenses. On the summary lines of the quote, Embarq charges an additional \$53,334 of labor without explanation. This appears to be a major discrepancy. Contract labor is normally defined in detail.

### III. Findings and Recommendations

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**Consultant's Recommendation**            The Allegheny County 9-1-1 Division of Emergency Services should review the quote in detail and make the appropriate changes before final approval.

**Management's Prior Response**            The County 9-1-1 team researched the quotation number referred to as Embarq's quote number 5001-02. We found that this quote did not belong to Allegheny County 9-1-1 Division and was never executed by the department. This quote was for equipment being bought from CLM by Sprint. The quote of 5001-02 which was never acted upon was for \$2,247,891. After revising and negotiating pricing the executed quote for the CLM equipment was for \$1,442,000 under quote number 5001-07. The amount referred to by the consultant for \$581,559 was not for Embarq installation but for CLM installation. The \$53,334 was Embarq's labor expenses.

**1<sup>st</sup> Follow-up:  
Status of Finding**                            No changes being made. Score: 0

**Current Status of Finding**                No changes being made. Score: 0

**Management's Current  
Response/Actions Taken**                9-1-1 management is not aware of a county-wide policy with regards to vendor travel and entertainment costs. Therefore, there is no guidance or standard for 9-1-1 management to cap (or otherwise regulate) vendor travel and entertainment expenses. 9-1-1 management is willing to comply with any County or Regulatory guidance with regards to limitations on travel and entertainment expenses for contractor should anything be identified and communicated to them.

**Controller's Review  
of 9-1-1's Actions Taken**                The 9-1-1 management team should request flat annual fee amounts and expected work hours by staff level for engagements. The proposed fee should reflect the total fees incurred and be all inclusive of out-of-pocket expenses such as travel, parking, meals, administrative assistance, etc. The management team has been advised of this recommendation for future contracts.

**Consultant's Finding #28**                Combest has reviewed the Request for Executive Action number 1181-05, concerning Contract #7617. This request awards Kimball and Associates approximately \$1.25M in services for the period October 3, 2005 to December 31, 2006. Using the fee schedule, and Kimball and Associates' most expensive rate of \$190.00/hr for a Principal resource,

### III. Findings and Recommendations

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this equates to 6,578 hours of manpower, or 822 days of resources, more than 2 resources dedicated to the County for each calendar day for the term of the contract. In the explanation provided by the Chief of the Department of Emergency Services it describes Kimball and Associates' scope of work as the '*continued development of...the operations of...wire line 9-1-1.*' Since so many issues have gone unnoticed it is difficult to understand how these resources were being applied to improve the operation of the wire line 9-1-1. Though not in the scope of this report, it is of grave concern that the County is paying \$1.25M for Kimball and Associates' service, which delivers inadequate operational value, and also that the financial value of the contract would suggest Kimball and Associates should have at least two dedicated staff working full-time for the County. It is very important for the County to review this issue with much greater scrutiny.

The wireless project, serviced by Kimball and Associates utilizes the data network to transport voice calls to answering locations. The term for this is Voice over Internet Protocol or VoIP. There are inherent service issues with VoIP if it is not properly implemented. It requires thorough monitoring and management to ensure that the service provided by the County is at the desired level. At the time this report was written and published, Embarq confirmed that there were quality of service issues and could not provide Cisco running configurations.

Kimball and Associates' scope is described by the 9-1-1 team to include development of the operations of wire line 9-1-1. It took a malfunction of the 9-1-1 system for Kimball and Associates to recognize that there were issues in the technology that they had recommended. Additionally, Embarq failed in their delivery of services and the 9-1-1 operation does not have any service management practices. This does not represent a reasonable standard of care nor value to the County.

#### **Consultant's Recommendation**

Kimball and Associates provides many municipalities in the State of Pennsylvania with 9-1-1 services and as such should reach some economies of scale for all its clients. Reducing the cost of services to all, as a result of the services performed by Kimball and Associates should be under direct scrutiny. Kimball and Associates should explain the resource allocation for the Wireless Phase II

### III. Findings and Recommendations

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project and define how they delivered \$1.25M of services during a 14-month engagement. Kimball and Associates should also define how they delivered each of the tasks in their defined scope.

**Management's Prior Response**

Kimball and Associates are in the process of providing cost analysis information to the Controller's Office on their fee and time based rates. This contract was entered into on a "Task Based/ Lump Sum" format due to the complexity of the Wireless Implementation Plan and uncharted documentation as to knowing the extent of time, effort, and resources needed during the Wireless implementation process.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

**Current Status of Finding**

Fully implemented. Score: 5

**Management's Current  
Response/Actions Taken**

This has been accomplished through meetings with the Emergency Management team, Kimball contractors, and the contract section of the Controller's Office. We have worked with Kimball to define their scope of work and to adjust their billing to the scope of work task.

**Controller's Review  
of 9-1-1's Actions Taken**

The Controller's Office reviewed the most recent Robert Kimball and Associates billing statements. All new billing going forward are now itemized. It shows the name of the consultant and the activities that consultant performed by day and how much the Department of Emergency Services will be billed for each line item. This is done to ensure each activity being billed by Kimball is applicable to specific contracts and jobs performed.

**Consultant's Finding #29**

The scope of work provided by Kimball and Associates is loose, vague and does not include any tasks to ensure that operational standards are discussed, reviewed or implemented.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should conduct an immediate review of all current operational standards.

**Management's Prior Response**

Kimball and Associates have had a Project Manager on location at the Allegheny County 9-1-1 Division of Emergency Service for the last three years. This Project

### III. Findings and Recommendations

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Manager has been a part of the 9-1-1 team and interactions take place daily. Discussions, problem solving, reviews and recommendations occur regularly over the course of this period addressing operational standards of the 9-1-1 center. Although most of the time in an informal environment we will ensure that these are formalized as written documentation.

**1<sup>st</sup> Follow-up:  
Status of Finding**

Partially implemented. Score: 3

**Current Status of Finding**

Partially implemented. Score: 4

**Management's Current  
Response/Actions Taken**

The Department of Emergency Services has, not only a department wide set of employee Standard Operating Guidelines and Rules of Conduct, but specific divisions within the department also have SOGs governing the operational aspect of their particular division. This has been an on-going process. Several have been instituted since the release of the Controller's Office audit. All SOGs for operational guidelines are available on the resource drive to all the 9-1-1 employees to reference. These were developed by the 9-1-1 management team with the assistance of Kimball.

The intent of the Enhanced Maintenance RFP is to establish a maintenance program which provides for enhanced maintenance services and procedures for the Allegheny County 9-1-1 centers. As the network and services diversify, Allegheny County DES recognizes the available capability to produce statistics on how the network is currently performing. This statistical tracking will allow Allegheny County DES to manage its network more effectively.

**Controller's Review  
of 9-1-1's Actions Taken**

The Controller's Office reviewed the most recent draft Allegheny County DES's Enhanced Maintenance RFP. The intent of the RFP is to establish a maintenance program which provides for enhanced maintenance services and procedures for Allegheny County 9-1-1 centers. As the network and services diversify, Allegheny County DES recognizes the available capability to produce statistics on how the network is currently performing. This statistical tracking will allow DES to manage its network more effectively. The Controller's Office did not do any further

### III. Findings and Recommendations

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testing as the Enhanced Maintenance RFP has not yet been implemented.

#### **Consultant's Finding #30**

The Scope of Work for Kimball and Associates specifically includes the task (Task 3.1.1) to work with the County and Sprint/CML in the functional, reliability and acceptance testing of the solution. A suitable testing plan would have tested the failure of trunking, both external and internal to the 9-1-1 system and would have noted that an All Trunks Busy alarm was not generated. Suitable testing would have indicated that AT&T trunks were not correctly configured. Kimball and Associates has failed to deliver the agreed scope of work, and as a result 217 callers could not access 9-1-1 services on October 25, 2006.

Kimball and Associates, while providing design and project management services for this project has offered no management of contracts or scopes. This is specifically defined in Task 2.1.6.8 of the Kimball and Associates Scope of Work for the Wireless project. The contracts presented by Embarq are generic contracts that need a great deal of work to be seen as favorable to the County. The scopes presented by Embarq are poor and offer no detail about deliverables, responsibilities or success factors.

#### **Consultant's Recommendation**

The wireless project should be stopped pending a complete review of the design and implementation. It should include a review of how the system will be operated and maintained. A review of the wireless project is recommended and an amendment to the scope of work for Kimball and Associates' is required to include operational processes. Testing procedures provided by Kimball and Associates should also be reviewed and once completed it should be issued to the County to be scrutinized.

#### **Management's Prior Response**

The County 9-1-1 strongly disagrees with this recommendation. We have a valid implementation plan. The Phase I implementation was completed on time and within budget. Phase II implementation is too important of a public safety need to stop. We see no reason to put the implementation of Phase II on hold midstream however we will continue to review each process prior to implementation.

#### **1<sup>st</sup> Follow-up: Status of Finding**

Mostly implemented, but needs to be completed. Score: 4

### III. Findings and Recommendations

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**Current Status of Finding**

Not Applicable

**Management's Current Response/Actions Taken**

Phase II of the wireless implementation has already been completed and Allegheny County is receiving substantial funding.

**Controller's Review of 9-1-1's Actions Taken**

Phase II is currently up and running. Per Jim Thompson, 9-1-1 Coordinator, there have been no issues with the Phase II wireless system to the date of this review (June 2009). Therefore, the consultant's recommendation is no longer applicable.

**Consultant's Finding # 31**

The Embarq Scope of Work document needs to be enhanced to ensure the County can clearly identify that the deliverables and agreed upon success criteria are measurable and can be achieved.

The Embarq Scope of Work presented by the County states in the Section titled 'Section H – Project Acceptance Criteria' that the project will be considered accepted when all equipment and applications are working as per vendor and industry standards. In short, the County has zero involvement contractually in the acceptance of this project.

**Consultant's Recommendation**

The Allegheny County 9-1-1 Division of Emergency Services should redefine the current Embarq Scope of Work to include tangible deliverables and clear success criteria. A County representative should be assigned to monitor the project and ensure successful completion.

On-site Embarq personnel should be trained in Cisco routing and switching, quality of service and data communications concepts.

On-site monitoring tools should allow the County to verify at any time the quality of service of the call being delivered to the answering point. It should also allow a call to be broken down to the granularity of each segment traverse so complete analysis is possible in a troubleshooting scenario.

Embarq must have all configurations reviewed by certified Cisco technicians and invite another company to review the Cisco configuration for testing.

### III. Findings and Recommendations

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**Management's Prior Response**      The County 9-1-1 team agrees to review and work with the Law Department and Controller's Office to seek guidance on how to accomplish this.

**1<sup>st</sup> Follow-up:  
Status of Finding**      Addressed and made attempt to change, but it is not what was recommended. Score: 2

**Current Status of Finding**      Not Applicable

**Management's Current  
Response/Actions Taken**      At the time of the initial review, Allegheny County Department of Emergency Services needed an "engineer's solution" with regards to the implementation of the Sentinel Patriot 9-1-1 solution. There needed to be a fully integrated relationship between the development of the system, services and equipment. It was not possible during the implementation phase of the project to separate a designed built system. Allegheny County DES personnel believed it would have been detrimental to the public safety needs of the citizens of Allegheny County to renegotiate the contract before the Sentinel Patriot System was fully implemented.

The Sentinel Patriot System is now under the 3-year warranty period as of April 25, 2009. All equipment covered under warranty during this period is covered under its replacement value.

As we move forward, Allegheny County DES will be working with the County's Purchasing Department to ensure that we utilize all existing contract and work to get the best value for the County.

**Controller's Review  
of 9-1-1's Actions Taken**      The Sentinel Patriot System has been conditionally accepted and fully implemented by Allegheny County DES. Therefore, the consultant's recommendation is no longer applicable.

**Consultant's Finding # 32**      The Wireless Phase II project is being deployed by Plant/CML. It is of the opinion of Kimball and Associates that since the merger of CML to form Plant/CML, some key technical individuals have left and as such have hampered progress on this project.

### III. Findings and Recommendations

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**Consultant's Recommendation**      The Allegheny County 9-1-1 Division of Emergency Services should generate a specific issue log, carefully record all outstanding activities and issue a milestone schedule. This log should be developed with Plant/CML, Embarq, Kimball and Associates and the County.

**Management's Prior Response**      The County 9-1-1 team is in agreement with this recommendation. We intend to implement a formalized project/program management monitoring component to our processes. We will be holding all employees and contractors to higher standards in requiring documentation of their activities.

**1<sup>st</sup> Follow-up:  
Status of Finding**      Partially implemented. Score: 3

**Current Status of Finding**      Partially implemented. Score: 3

**Management's Current  
Response/Actions Taken**      The Wireless Phase II project had been completed as of November 2008. Therefore the specific issue on logs and outstanding activity reports as related to deployment is no longer valid now that the 9-1-1 center is fully Phase II compliant. The Department of Emergency Management as part of the Enhance Maintenance RFP is including the solution process in which logs and reports will be generated electronically by the vendor as part of a tracking process under this maintenance agreement

**Controller's Review  
of 9-1-1's Actions Taken**      The Controller's Office reviewed the most recent draft of Allegheny County DES's Enhanced Maintenance RFP. The Controller's Office did not do any further testing as the Enhanced Maintenance RFP has not yet been implemented.

#### IV. Conclusion

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Overall, of the 30 recommendations, our review disclosed a cumulative score of 87 out of a possible 125 points, or 70%. This is an improvement from the last review which revealed a score of 49%. However, the increase in the score can be attributed to the 5 recommendations which are no longer applicable due to the passage of time as well as contracts which have expired. These 30 recommendations are detailed below:

- No resolution was made to 1 or 3% of the 30 recommendations.
- 9 or 30% of the recommendations were addressed, but no further action was taken.
- 8 or 27% of the recommendations were partially implemented.
- 7 or 23% of the recommendations were fully implemented, of which 2 had been fully implemented during the last review.
- 5 or 17% of the recommendations are no longer applicable.