



# **CITY OF SAN ANTONIO**

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December 4, 2014

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**SUBJECT: Audit Report of San Antonio Police Department Helicopter Maintenance**

**Mayor and Council Members:**

We are pleased to send you the final report of the Audit of San Antonio Police Department Helicopter Maintenance. This audit began in April 2014 and concluded with an exit meeting with department management in September 2014. Management's verbatim response is included in Appendix D of the report. The San Antonio Police Department management and staff should be commended for their cooperation and assistance during this audit.

The Office of the City Auditor is available to discuss this report with you individually at your convenience.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'Kevin W. Barthold'.

Kevin W. Barthold, CPA, CIA, CISA, CRMA  
City Auditor  
City of San Antonio

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**CITY OF SAN ANTONIO**  
**OFFICE OF THE CITY AUDITOR**



Audit of San Antonio Police Department

Helicopter Maintenance

Project No. AU14-027

December 4, 2014

Kevin W. Barthold, CPA, CIA, CISA  
City Auditor

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## Executive Summary

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As part of our annual Audit Plan approved by City Council, we conducted an audit of the San Antonio Police Department (SAPD) Helicopter Maintenance Program. The audit objectives, conclusions, and recommendations follow:

### **Are controls over the SAPD Helicopter Maintenance Program adequate?**

Yes, overall, controls over SAPD Helicopter Maintenance are adequate. The SAPD Helicopter Detail (Detail) has controls to ensure maintenance is performed in accordance with federal and manufacturer requirements, helicopters are available for flight, mechanics are certified by the Federal Aviation Administration (FAA), inventory is appropriate and recorded accurately, and fire and jet fuel safety are appropriately addressed.

Additionally, SAPD Management requested we examine life-cycle issues for the SAPD Helicopter Program, so we benchmarked it against nine other cities with police helicopters.

We identified two areas for improvement:

- ◆ Components of the SAPD helicopter program are not aligned to support current mission/operational goals. Specifically, mission goals (especially helicopter flight hours) are not aligned with program components including fuel budget, staffing, and helicopter fleet size.
- ◆ The SAPD does not have a formal plan or funding mechanism to replace helicopters at end-of-life.

We recommend that the Chief of Police:

- ◆ Re-evaluate and formally document the mission and objectives of the Detail and related high-level policy decisions in order to align program components for better effectiveness, efficiency, and economy.
- ◆ Develop a formal life-cycle plan for replacing helicopters in alignment with the Detail's mission. Also, a funding mechanism should be created and implemented to save for future helicopter purchases.

SAPD Management's verbatim response is in Appendix D on page 23.

## Table of Contents

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Executive Summary .....	i
Background.....	1
Audit Scope and Methodology .....	4
Audit Results and Recommendations .....	6
A. Alignment of Helicopter Program Components.....	6
B. Helicopter Replacement Planning.....	11
Appendix A – Comparison of Surveyed Cities’ Population, Area, and Flight Hours.....	14
Appendix B – Results of Survey.....	15
Appendix C – Staff Acknowledgement.....	22
Appendix D – Management Response .....	23

## Background

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The SAPD Helicopter Detail (Detail) is part of the Operations Support Bureau's Tactical Support Division under the command of the Traffic Section. The Detail was started in 1971 with six pilots. It has since grown in size and operating hours. The Detail is currently comprised of two police Sergeants (one for day shift, one for night shift), 18 police officers, three mechanics, and a helicopter maintenance supervisor. All 20 of the police officers are certified commercial pilots.

The Detail is located at the Stinson Municipal Airport and is operational 24 hours a day, 7 days a week, 365 days a year. It operates on three shifts: "A" shift (6:00 am – 4:00 pm); "B" shift (4:00 pm – 2:00 am); and "C" shift (2:00 am – 6:00 am). "C" shift is staffed by one "A" shift pilot working 2:00 am – noon and one "B" shift pilot working 8:00 pm – 6:00 am.

The Detail currently has four operational and three inoperative helicopters. The four operational helicopters consist of:

- ◆ Two Airbus/Eurocopter EC120b helicopters placed into service April 2014.



- ◆ One Airbus/Eurocopter AS350B3, known as the AStar, purchased in FY 2007. This is the only helicopter with bambi bucket, long-line, and hoist capabilities.



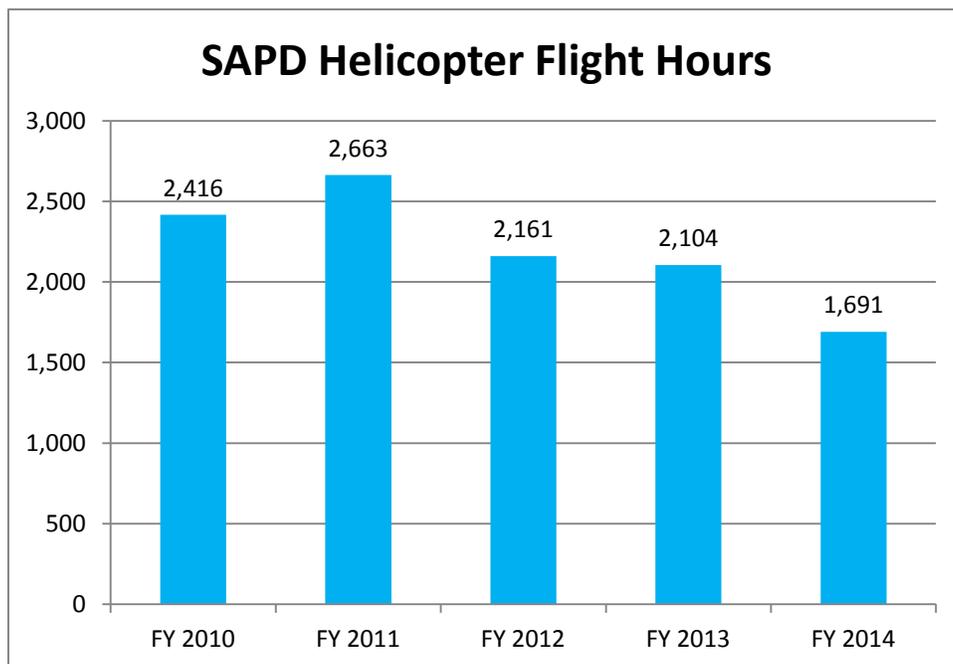
- ◆ One Schweizer 333 purchased in FY 2007 (used as the training helicopter).



The three inoperative helicopters consist of:

- ◆ One Schweizer 333 purchased in FY 2004 (currently retired). This aircraft is missing parts that cannot be acquired any longer.
- ◆ Two Schweizer 333 helicopters purchased in FY 2000 (currently retired, the SAPD plans to sell these).

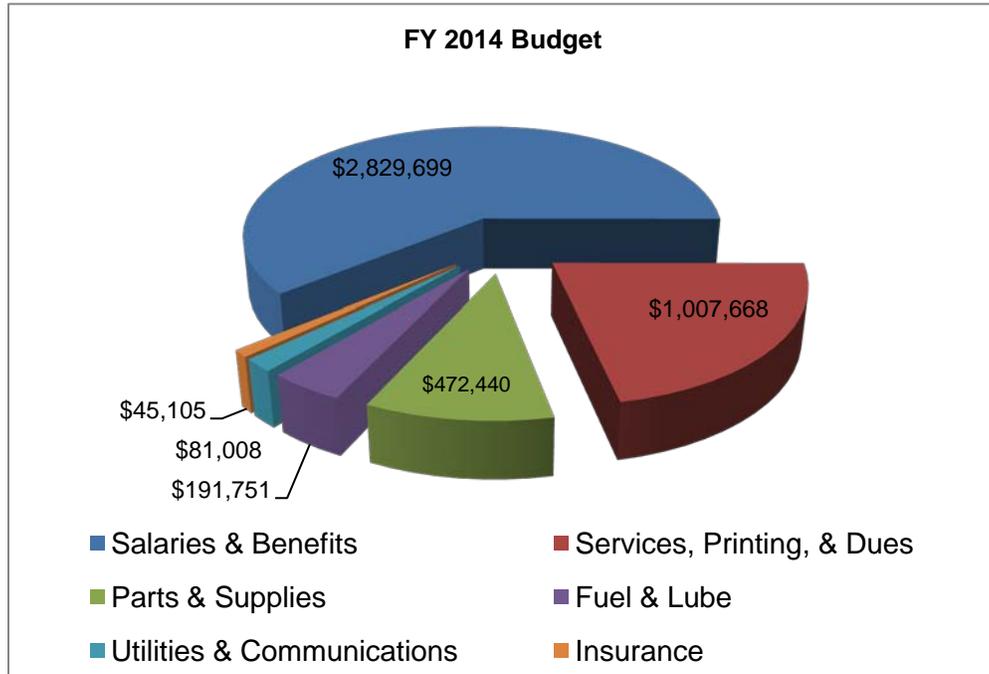
All but one of the Schweizer helicopters are inoperative because Sikorsky Aircraft Corporation purchased the Schweizer plant in 2004 and stopped manufacturing parts and providing support for the Schweizer 333 helicopter by 2012. This audit covered the period before the new EC120b's were acquired and the Detail was coping with a fleet of which four of five helicopters required parts that were difficult or impossible to obtain due to the closure of the Schweizer plant. However, since the delivery of the new EC120b's in April 2014, the Detail's flight hours have been steadily increasing each month. The Detail's annual helicopter flight hours for the past five years are shown below:



The Detail supports a variety of missions with the overall objective being the preservation of life. The Detail accomplishes its mission by supporting patrol activities, vehicle and foot chases, crime surveillance, search and rescue assistance, the recovery of property, and the support of other SAPD units.

All missions require a minimum of two officers – one pilot and one tactical flight officer. Among other tasks, the tactical flight officer manages the radios (e.g. transmits information on pursuits), the video camera, forward-looking infrared (FLIR), searchlights, and aviation mapping computers. In San Antonio, pilots are full-time police officers and act in both the pilot and tactical flight officer capacity.

During FY 2013, the Detail reported assisting in the arrest of 601 people, the recovery of vehicles and other property worth \$1.2 million, and responded to 6,595 calls. In FY 2013, the Detail spent \$3.6 million, with 75% of that amount going to personnel costs (salaries and benefits). The chart below shows the components of the FY 2014 budget for the Detail.



## Audit Scope and Methodology

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The audit scope was from October 2012 to March 2014, with information from FY 2010 to September 2014 as needed for trending and estimation purposes. Our audit scope included a mixture of historical and current-state testing. The scope included SAPD Helicopter Detail operations, focusing on maintenance activities including record keeping, IT controls, inventory life cycle, and compliance with federal regulations. When examining fleet life cycle, we included the entire helicopter detail, not just maintenance. We performed testing from June to August of 2014.

To gain an understanding of internal controls, we conducted interviews of appropriate personnel and reviewed regulations to identify controls related to helicopter maintenance. We also utilized management reports, physical observations, vendor contracts, and standard operating procedures.

To develop test criteria, we used the Code of Federal Regulations Title 14, Aeronautics and Space; City of San Antonio Administrative Directives; The International and National Fire Codes with City of San Antonio adopted local amendments; City of San Antonio Policies and Procedures; and manufacturer maintenance manuals. We also conducted benchmarking of other city police department helicopter operations.

We conducted tests of controls and records using judgmentally sampled transactions. We tested the accuracy of inventory, the appropriateness of inventory, compliance of maintenance and associated records with federal regulations and manufacturer guidelines, controls over fire and fuel safety, and whether the Detail adequately addressed prior Federal Aviation Administration (FAA) findings. We used managerial reports, budget, and expenditure data to analyze the availability of helicopters, the frequency and amount of flight hours, pilot staffing, budget trends, expenditures, and the purchasing process.

We also benchmarked the Detail's operations to those of other city police aviation units in order to provide further insight. Nine cities, in addition to San Antonio responded to our survey regarding their helicopter/aviation units for calendar year (CY) 2013 or fiscal year (FY) 2013 whichever period they tracked performance. See Appendix A on page 13 for a full listing of survey cities and associated service population and square mileage coverage.

Department personnel utilize the City's SAP financial system to record expenditures. They also use the City's SAePS procurement system to record purchases. Controls for SAP and SAePS are maintained by the Information Technology Services Department (ITSD) and were not reviewed within the scope of this audit.

SAPD Detail personnel also use Digital Airware (a commercial software product) to record flight and maintenance records. Digital Airware is a web-based system that does not interface with any other systems and no systems rely on its information. The vendor maintains most of the controls for Digital Airware and there are two system administrators on the Detail staff who can assist with routine tasks such as user provisioning. We did not conduct procedures to test the application or general controls of this system, with the exception of access controls. We tested all access controls and ensured they were working as intended. We also performed direct tests of inventory data contained within Digital Airware. We compared flight data from Digital Airware to shift logs maintained by the Detail as well as fuel consumption data to the physical meter on the fuel tank and to invoices for fuel purchases to ensure they were reasonably consistent.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our audit results and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our audit results and conclusions based on our audit objectives.

## Audit Results and Recommendations

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Overall, the Detail has adequate controls over its helicopter maintenance program. All mechanics have appropriate certificates issued by the FAA and the maintenance supervisor has an inspector rating from the FAA. The supervisor acts as a quality control reviewer of the mechanics' work. The Detail conducts preventive and non-routine maintenance in accordance with required manufacturer and FAA schedules and procedures. Although the Detail has the authority under federal law to operate its helicopters as "public aircraft" (a government, non-commercial aircraft that carries only crewmembers) which would exempt them from most FAA regulations, the Detail voluntarily complies with FAA regulations described by 14 CFR §91, which require helicopters to be inspected both annually and after every 100 hours of flight. Although we did not include this question in our survey of other cities, San Diego also reported complying with these provisions.

Additionally, the Detail records its parts inventory accurately and it is not over-stocked. The Detail has certain measurement-related tools calibrated yearly. Access controls to the software used to track maintenance, inventory, and pilot reports are appropriate and working as intended. The Detail also has adequate procedures in place to ensure compliance with fire codes and the safe handling of jet fuel.

Given the difficulties experienced by the Detail in obtaining necessary parts and supplies (see second paragraph, page 2), it managed to provide ample availability of helicopters, with only three calls being refused for maintenance issues during the scope period of a year and a half (October 2012 to March 2014).

However, we noted two areas in which the Detail could improve.

### A. Alignment of Helicopter Program Components

Components of the SAPD helicopter program are not aligned to support current mission/operational goals. Specifically, mission goals (especially helicopter flight hours) are not aligned with program components including fuel budget, staffing, and helicopter fleet size.

#### *Flight Hours*

We compared the Detail's total flying hours to those of other survey respondents and found that San Antonio had the fourth highest flight hours per day compared to nine other cities (see table 1, next page).

<b>FY / CY 2013</b>	<b>Flight Hours</b>	<b>Days per Year</b>	<b>Average Flight Hours per Day</b>
Phoenix	4,681	365	12.8
San Diego	3,500	365	9.6
Mesa	2,550	365	7.0
<b>San Antonio</b>	<b>2,104</b>	<b>365</b>	<b>5.8</b>
Fresno	1,128	208	5.4
Nashville	1,800	365	4.9
Oklahoma City	1,600	365	4.4
Dallas	1,500	365	4.1
Philadelphia	1,000	365	2.7
Oakland	400	260	1.5

However, San Antonio also had the fourth lowest average flight hours per standard operating day of the 10 cities in the survey as shown in table 2 below.

<b>FY / CY 13</b>	<b>Avg. Flight Hrs. Per Day</b>	<b>Daily Hours of Operation</b>	<b>Percent of Available Hours Flown</b>
Fresno	5.4	10	54.0%
Phoenix	12.8	24	53.4%
San Diego	9.6	20	48.0%
Mesa	7.0	20	35.0%
Philadelphia	2.7	8	33.8%
Nashville	4.9	17	28.8%
<b>San Antonio</b>	<b>5.8</b>	<b>24</b>	<b>24.2%</b>
Oklahoma City	4.4	20	22.0%
Dallas	4.1	24	17.1%
Oakland	1.5	10	15.0%

The Detail has informal (undocumented) goals for patrolling: it envisions having three hours of patrol during the A shift, three hours of patrol during the B shift, and one and a half hours of patrol during the C shift, for a total of seven and a half hours a day (or about 2,700 hours per year), plus answering calls.

However, it was not able to achieve this schedule during our scope period. The Detail reported cutting back on patrols largely due to difficulty obtaining parts for the Schweizer aircraft. The Detail also reported that it had to manage the hours flown on each aircraft in order to spread maintenance costs over time and to ensure availability of helicopters for emergency calls. This was a period in which some aircraft were being retired due to inability to obtain parts, and maintenance of the remaining aircraft had to be timed so that multiple major services were not incurred too close together.

*Fuel Budget*

The Detail has an informal goal to fly 2,700 hours per year but does not have the fuel budget to do so. The Detail only flew 2,104 hours in FY 2013. In FY 2013, the Detail spent approximately 83% of its Motor Fuel and Lube budget. If it had spent its whole budget, it still would have only been able to fly about 2,500 hours.

*Staffing*

The Detail has more personnel than it needs to support the current level of flight hours. The Detail is staffed 24 hours a day, 7 days a week, 365 days a year. In FY 2013, each pilot of the Detail, other than the Sergeants (who mainly perform administrative duties), only flew between 11-18%<sup>1</sup> of their duty time. Even accounting for the time needed for pre- and post-flight checks of the aircraft, administrative paperwork, and patrolling of Stinson airport, this leaves a significant amount of personnel time available for other duties. In fact, of the eight cities that responded to the necessary questions in our survey, San Antonio had the second highest number of flight personnel, but the second lowest number of hours per flight crew as shown in table 3 below.

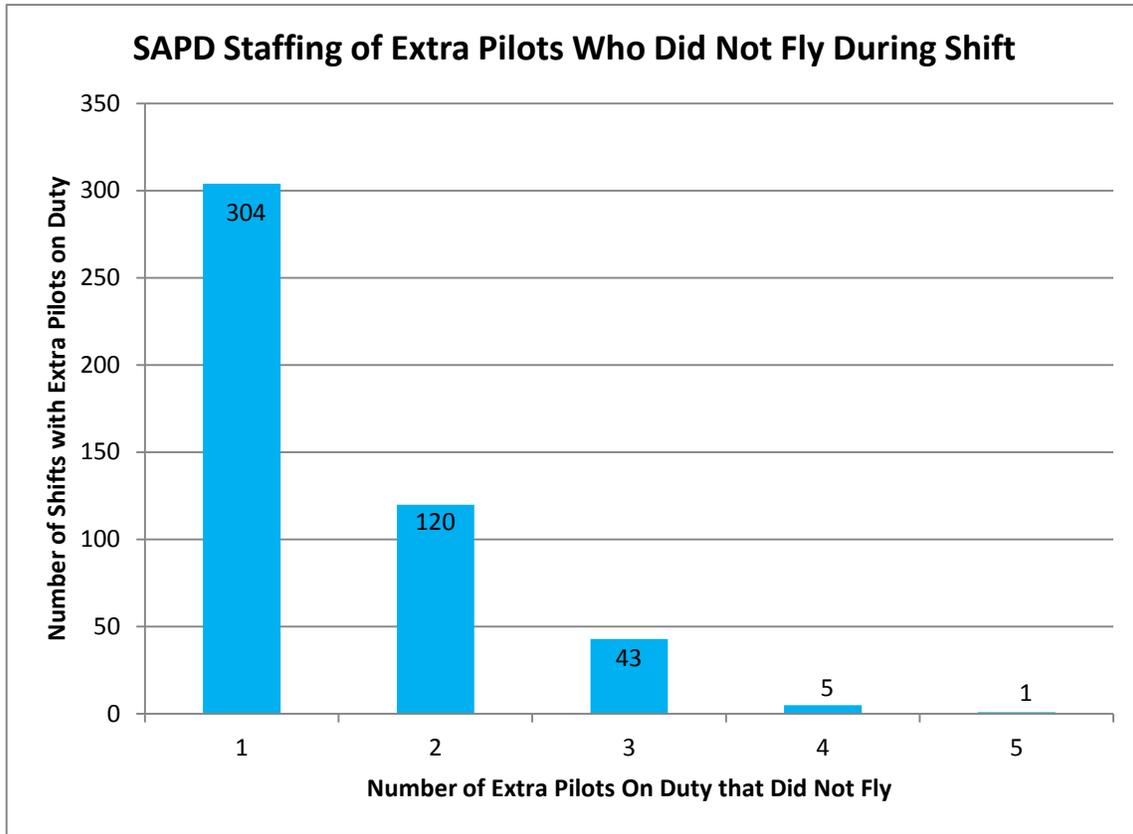
<b>Table 3. Hours Per Flight Crew</b>					
<b>FY/CY 13</b>	<b>Flight Personnel</b>	<b>Crew Size</b>	<b>Number of Crews</b>	<b>Hours Flown</b>	<b>Hours per Crew</b>
San Diego	13	2	6.5	3,500	538
Fresno	6	2	3.0	1,128	376
Phoenix <sup>1</sup>	25	2	12.5	4,445	356
Nashville	8	1.5	5.3	1,800	338
Mesa	17	2	8.5	2,550	300
Oakland	3	2	1.5	400	267
<b>San Antonio</b>	<b>20</b>	<b>2</b>	<b>10.0</b>	<b>2,104</b>	<b>210</b>
Dallas	17	2	8.5	1,500	176

<sup>1</sup> Did not include 6 fixed-wing aircraft pilots, as hours were helicopter only.

To be in the top three of the above table, San Antonio would need either to fly 3,565 hours per year or to reduce the number of flight personnel to 11 (which would make it difficult to operate 24-7). Only two other cities, Phoenix and Dallas, reported a 24-hour operation.

Additionally, we looked at how many pilots were on duty for all days in the scope period and compared that to the days on which they charged flight time (as either pilot or tactical officer). Assuming that the Detail should keep enough pilots on hand to fly one helicopter (two pilots at any given time, not counting the Sergeants), in FY 2013 there were 473 shifts with additional pilots on duty that did not fly. This represents 6,896 man-hours, or approximately 3.3 full time equivalents.

<sup>1</sup> This assumes a 1,750 hour work-year (or about 84% of a standard 2,080 hour work year to account for vacation, sick leave, holiday, and training).



*Helicopter Fleet Size*

We noted the Detail had more helicopters than it needs to support current operations. The Detail had five operable helicopters during FY 2013 - the third highest number of all surveyed cities (see table 4 below). However, SAPD generally only operated one or two on a given day.

FY/CY 2013	Number of Helicopters Owned and Usable
Nashville	6
Phoenix	6
<b>San Antonio</b>	<b>5</b>
San Diego	4
Mesa	3
Philadelphia	3
Dallas	2
Oakland	2
Oklahoma City	2
Fresno	2

Because the Detail was experiencing problems with obtaining parts for its fleet during this time, as noted above, we explored how many helicopters it had available (not down for maintenance or moth-balled) for each shift for FY 2013.

We gathered the data from the Detail's shift records it keeps for performance metrics and found that on average, there were 3.1 helicopters available in FY 2013 as shown below. The average of 3.1 helicopters available per shift in FY 2013 is consistent with the retirement of three Schweizer helicopters during FY 2013 – FY 2014. Flight records indicate that the 2004 Schweizer was last flown one hour or more on May 20, 2013. One 2000 Schweizer was last flown for an hour or more on July 19, 2013 and the other 2000 Schweizer was last flown for an hour or more on July 14, 2013.

The SAPD replaced three older Schweizer 333 helicopters with two new Airbus/Eurocopter EC120b helicopters, currently leaving it with four helicopters. Only Nashville (with a larger area to cover) and Phoenix (with a larger population and a larger area to cover) had more helicopters. However, the Detail only flew an intermediate number of hours per helicopter (see table 5 below), indicating that it could gain some additional efficiency, especially with the new helicopters added to its fleet.

<b>Table 5. Average Flight Hours Per Helicopter</b>				
<b>FY/CY 2013</b>	<b>Helicopters</b>	<b>Total Flight Hours</b>	<b>Flight Hours Per Helicopter</b>	<b>Avg. Helicopter Age</b>
San Diego	4	3,500	875.0	9
Mesa	3	2,550	850.0	16
Oklahoma City	2	1,600	800.0	Not given
Phoenix	6	4,681	780.2	6
Dallas	2	1,500	750.0	7
Fresno	2	1,128	564.0	10
<b>San Antonio</b>	<b>5</b>	<b>2,104</b>	<b>420.7</b>	<b>11</b>
Philadelphia	3	1,000	333.3	16
Nashville	6	1,800	300.0	34
Oakland	2	400	200.0	22

We noted that several cities, including Phoenix, Dallas, and Fresno, reported restricted flying hours due to budgetary constraints, but all of which flew more hours per helicopter than San Antonio. Both Dallas and Fresno had only two helicopters in their fleets. However the age of their fleets did not appear to be a factor in the hours flown per helicopter.

Since the delivery of the EC120b's in April 2014, the Detail has been increasing its flying hours. If we perform the calculation above using the 3 helicopters that are both available and serviceable (not the Schweizer) for FY 2015, and assume a rate of 200 hours per month (the rate achieved in August 2014), SAPD could be expected to average 800 hours per helicopter, putting it on par with Oklahoma City, in the top four.

To get an idea of whether or not the size of the SAPD helicopter fleet was appropriate, we surveyed cities about their annual aviation budget (all-inclusive:

pilot and mechanic personnel, parts and supplies, fuel, overhead, outsourced repairs, etc.) and averaged that over the number of active helicopters for the year. San Antonio had the second highest cost per helicopter and the highest cost per flight hour out of four cities responding (see tables 6 and 7 below). While this should not be the sole measurement of efficiency, it may indicate that San Antonio has more helicopters and personnel (the largest budget category) than it needs for the current level of flight.

<b>FY/CY 2013</b>	<b>Aircraft</b>	<b>Aviation Total Budget</b>	<b>\$ Per Aircraft</b>
Dallas	2	\$ 2,300,000	\$ 1,150,000
<b>San Antonio</b>	<b>5</b>	<b>\$ 3,800,000</b>	<b>\$ 760,000</b>
Fresno	2	\$ 1,492,600	\$ 746,300
Philadelphia	3	\$ 1,200,000	\$ 400,000

<b>FY/CY 2013</b>	<b>Aviation Budget</b>	<b>Hours Flown</b>	<b>\$ per Hour</b>
<b>San Antonio</b>	<b>\$ 3,800,000</b>	<b>2,103.6</b>	<b>\$ 1,806.43</b>
Dallas	\$ 2,300,000	1,500.0	\$ 1,533.33
Fresno	\$ 1,492,600	1,128.0	\$ 1,323.23
Philadelphia	\$ 1,200,000	1,000.0	\$ 1,200.00

The SAPD Helicopter Program needs to be balanced so that it reflects a consistent vision of the number of helicopters in the fleet, the number of hours to be flown, the pilots needed to fly those hours, and the fuel and parts and supplies needed to operate the helicopters. As helicopters age, as well as when the mix of helicopters in the fleet changes, the budget for parts and supplies, as well as maintenance costs will need to be re-evaluated to determine what is needed to support the mission and goals of the Detail.

When program components including fuel budget, staffing, and fleet size are not aligned to support mission goals such as flight hours, the SAPD risks losing efficiency, effectiveness, and economy.

**Recommendation**

The Chief of Police should re-evaluate and formally document the mission and objectives of the Detail and related high-level policy decisions in order to align program components for better effectiveness, efficiency, and economy.

**B. Helicopter Replacement Planning**

The SAPD does not have a formal plan or funding mechanism to replace helicopters at end-of-life. Unlike for police automotive vehicles, the SAPD does

not have a method in place to accumulate funds for future replacement of helicopters.

The Detail reports that it would like to replace its two newest helicopters (the EC120b's) at the end of 10 years or 6,000 hours of service. These criteria were chosen because a major overhaul is due at 12 years of service, which the Detail estimates would cost between \$98,000 and \$198,000 (depending on parts and labor) and take nine weeks or more to complete. Also, new aircraft must be ordered six to eight months in advance. However, no formal documented plan for the retirement of helicopters in the fleet is currently in place.

When the Airbus/Eurocopter EC120b's were ordered, the assumptions made in the planning for this purchase were that they would be flown an average of 600 hours each per year. This was based on acquiring four EC120b's (two in March 2014, two later), each of which would be flown 600 hours per year. Additionally, the AStar would be flown 300 hours per year, for a total of 2,700 hours of flight time per year.<sup>2</sup>

The Detail reported it had planned to use funds obtained from selling the old Schweizer helicopters to purchase one of the two EC120b helicopters to be acquired after FY 2014. However, the manufacturer of the four Schweizer helicopters was sold and shutdown prior to the anticipated end-of-life. This will make it difficult to dispose of them and obtain any significant remuneration. Since the Schweizer helicopters are no longer as valuable on the resale market as they would have been a few years ago, SAPD now anticipates purchasing just one additional helicopter.

With the cancellation of plans for the purchase of a fourth EC120b, the Detail will need to either reduce its planned flight time or increase the number of hours flown per year for each helicopter. Increasing the annual flying time per helicopter would require increases in the annual budgets for parts and supplies and move up the replacement time-table for the EC120b's and AStar. Decreasing the annual total flight time would exacerbate the personnel situation described above in observation A.

A helicopter replacement policy should be based on factors such as age, flight hours, part availability, costs to repair vs. costs to buy new, funding, etc. Without a plan for replacement, the Detail risks not having sufficient funds available when a new helicopter is needed and having to spend more funds on aging helicopters that will need expensive and time-consuming repairs, overhauls, and inspections.

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<sup>2</sup> The Detail actually flew just 2,104 hours in FY 2013.

## **Recommendations**

The Chief of Police should develop a formal life-cycle plan for replacing helicopters in alignment with the Detail's mission. Also, a funding mechanism should be created and implemented to save for future helicopter purchases.

## Appendix A – Comparison of Surveyed Cities’ Population, Area, and Flight Hours

Nine cities in addition to San Antonio participated in our survey:

- ◆ Oklahoma City, OK (3rd highest land area in the nation)
- ◆ Philadelphia, PA (5th largest city in the nation by population)
- ◆ Nashville, TN (6th largest land area)
- ◆ Phoenix, AZ (6th largest by population, 5th largest by land area)
- ◆ San Antonio, TX (7th largest by population; 8th largest by land area)
- ◆ San Diego, CA (8th largest by population)
- ◆ Dallas, TX (9th largest by population)
- ◆ Mesa, AZ
- ◆ Oakland, CA
- ◆ Fresno, CA

Service Population and Square Mileage Coverage				
City	Last Complete Fiscal or Calendar Year	Population of Service Area	Square Miles of Coverage	Total Flight Hours (All Helicopters)
Philadelphia	CY 2013	1.6 million	134	1,000
Phoenix	CY 2013	1.5 million	518	4,445
San Antonio	FY 2013	1.38 million (1.79 million Bexar County)	461 (1,240 Bexar County)	2,104
San Diego	FY 2012 -13	over 1.2 million	400	3,500
Dallas	CY 2013	1.2 million	385	1,500+
Nashville	CY 2013	610,00	535	1,800
Oklahoma City	CY 2013	609,000 City (1.3 million Metro)	621	1,600
Fresno	CY 2013	500,000	110	1,128
Mesa	CY 2013	500,000	150	2,550
Oakland	FY 2013 - 2014	400,740 (2012)	78	400

## Appendix B – Results of Survey

The following tables are the raw results of the benchmarking survey conducted.

Types of Missions Supported					
City	Routine Flights / Patrols	Vehicle chase	Foot chase	Vehicle / Stolen Property Recovery	Search and Rescue
San Antonio	Yes	Yes	Yes	Yes	Yes
Dallas	Yes	Yes	Yes	Yes	Yes
Mesa	Yes	Yes	Yes	Yes	Yes
Oakland	Yes	Yes	Yes	Yes	Overhead search only. No physical rescue.
Oklahoma City	Yes	Yes	Yes	Yes	Search only
Philadelphia	Yes	Yes	Yes	Yes	Search only
San Diego	Yes	Yes	Yes	Yes	Yes
Fresno	Yes	Yes	Yes	Yes	No
Nashville	Yes	Yes	Yes	Yes	Search only. Not equipped for rescue.
Phoenix	Yes	Yes	Yes	Yes	Yes
City	Fire Support	Emergency Medical	Outside Agency Assistance	SWAT	
San Antonio	Yes	No	Yes	Yes	
Dallas	Yes	Yes	Yes	Yes	
Mesa	Yes	No	Yes	Yes	
Oakland	No	No	Yes	Yes	
Oklahoma City	Currently assist Fire visually but do not conduct water drops but will in new aircraft.	No	Yes	Yes	
Philadelphia	Limited	No	Yes	Limited	
San Diego	Yes, in major fires - transport fire personnel. No water dropping.	No	Yes	Yes	
Fresno	No	No	Yes	Yes	
Nashville	No	No	Yes	Yes	
Phoenix	Capable, but not currently.	No	Yes; Limited to life threatening emergencies.	Capable, but not currently.	

## Appendix B – Results of Survey (continued)

CY 2013 or FY2013	Number of Helicopters Owned and Usable by the Unit <sup>3</sup> .	Do you Have Aircraft Other than Helicopters in Your Unit?	Age of Helicopters	Number of Helicopters Flown on an Average Day
Philadelphia	3 with a 4th expected to be delivered in August 2014	No	1988/16yrs	1
Phoenix	8 (5 Airbus AS350B3's, 1 Agusta A109, and 3 Agusta A199's are currently for sale)	Yes-4 fixed wing (a Pilatus PC12, Cessna P210, Cessna 182, & Cessna 172)	5 purchased between 2005 and 2011; 3 purchased between 2006 and 2008	2-3 helicopters per day
San Antonio	5	No	10.5 years for FY2013 (7.7 years for entire fleet; 4 years for current fleet)	2
San Diego	4	We had 2 Cessna 182rg for 25+ year but sold them last year	9 years old	1
Dallas	2	No	7 years, placed in service 2007	1 <sup>4</sup>
Nashville	6	No	4 are 40 years old 2 are 23 years old	2
Oklahoma City	2	No	Currently fly MD 500's but are expecting two new AS350 B3e's this fall. MD's will be sold	1
Fresno	2	Yes	11 yrs and 9 yrs	1
Mesa	3	Yes, Two Fixed wing aircraft. Cessna 172 and Cessna P210	16 years and 12 years. 21 years on recently crashed helicopter(engine failure)	1
Oakland	2	No	23, 21	1

<sup>3</sup> Does not count helicopters owned but not flown and the unit is planning to sell, scrap, or use for cannibalization purposes.

## Appendix B – Results of Survey (continued)

CY 2013 or FY2013	Total Maintenance Hours (All Helicopters Together)	Total Flight Hours (All Helicopters Together)	Total Weather Hours (X Hours of Weather * Number of Helicopters Down)	Total Unused Hours (Number Hours not Flying Due to Maintenance, Weather, or Other Reasons but Staffed and Ready to Go if Needed).
<b>Philadelphia</b>	Unknown	1,000 +/-	Weather days approx 60. Some are partial, approx 150 hrs	Maintenance hours down - zero. Weather Approx 150 hrs.
<b>Phoenix</b>	Not tracked.	4,445	Not specified.	Not specified.
<b>San Antonio</b>	16,265.8 elapsed shift hours unavailable due to maintenance	2,103.60	594	Not tracked
<b>San Diego</b>	helicopters come down every 100 hours of flight time for maintenance	3,500	average 10 weather related down time per month	out of 3500 allotted flight hours, actual hours flown varies 3000-3500 per year
<b>Dallas</b>	Not calculated	1,500+ hours	Not recorded	NA - See comments below
<b>Nashville</b>	2 full time mechanics	1,800	Not tracked	200
<b>Oklahoma City</b>	Unknown	1,600	Unknown	Unknown
<b>Fresno</b>	39	1,128	N/A	N/A
<b>Mesa</b>	Not Tracked- Progressive Maint. Schedule allows for backup aircraft availability	2,650.5 hours total	Less than 10 hours total	Less than 50 hours
<b>Oakland</b>	200 billed mechanics' hours (not elapsed shift hours)	400	40 hours, 1 helicopter	80

## Appendix B – Results of Survey (continued)

CY 2013 or FY2013	Number of Pilots (sworn, civilian, and/or contract)	Number of Tactical Officers or Observers (only those that are not also pilots - sworn, civilian, and/or contract)	Minimum Number of Crew Members per Flight.	Number of Mechanics/Repair Personnel
<b>Philadelphia</b>	Not Authorized to Answer	0	2	0
<b>Phoenix</b>	23 Helicopter pilots + 6 Airplane Pilots (planning to reduce staffing per audit issued 05/2014)	2	2	1 DOM, 1 QA, 1 Avionics, 2 Parts Clerks, 5 Main. Techs and hiring another. All work 10 hr shifts
<b>San Antonio</b>	20	0	2	4
<b>San Diego</b>	8 officer pilots and 1 sergeant/pilot	4 TFO's	2	2
<b>Dallas</b>	15 sworn (1 Sgt., 14 Sr. Corporal / Pilots)	2 - 1 Lt. and 1 Sgt.	2	2
<b>Nashville</b>	8	0	1 daylight hours 2 night	2
<b>Oklahoma City</b>	8 Sworn	16 trained tactical officers which are used on a part-time basis when needed	2	2
<b>Fresno</b>	3	3	2	2
<b>Mesa</b>	8	9	2	2
<b>Oakland</b>	2	1	2	0

## Appendix B – Results of Survey (continued)

CY 2013 or FY2013	Number of Pilot shifts/duration of shift (8 hrs, 10 hrs, etc.)	Number of Mechanic Shifts/duration of shift	Is your facility a certified Repair facility?	Standard Hours of the Unit (operating /on-call / open for business hours, ex: open 20 hrs, on-call 4 hrs)
<b>Philadelphia</b>	One 8 hour shift daily	0	No	*hours per day 6PM to 2AM
<b>Phoenix</b>	4-10 hour shifts (in a single day, there is overlap); patrols occur noon - 1:30 pm, 2:30 pm - 6:00 pm, and 7 pm - 2:30 am timeframe.	Maintenance personnel are staffed Mon-Fri 0600-1600 hrs	Not specified.	24 hrs per day; Includes pre-determined flight schedule of 7 patrol missions per day at 90 min. each, for 10.5 hours/24-hr day or 3,822 hours per year. Additional hours are due to calls for service.
<b>San Antonio</b>	3-10 Hour shifts; Day: 6 am - 4 pm Night: 4 pm - 2 am 1 Day person working 2 am - noon 1 night person working 8 pm - 6 am	1-8 Hour Shift	No	24 hr operation, 7 days a week, 365 days per year.
<b>San Diego</b>	10 hour shifts (2 10-hr shifts based on availability)	10 hour shifts 6 days a week	No	0730-1730 day watch 1700-0300 night watch
<b>Dallas</b>	2 shifts: Day: 6am - 4pm Night 8pm - 6am with 1 person from day working 10am-8pm and 1 person from night working 4pm - 2 am to cover the gap This is the schedule 24/7/365.	1-8 Hour Shift	No	24 hr operation, 7 days a week, 365 days per year
<b>Nashville</b>	2 eight hour shifts	1 shift 8 hours	No	17 working 7 on call
<b>Oklahoma City</b>	2, 10hr shifts (8 on 6 off)	2, 10hr shifts, 1 works Mon-Thurs and the other works Tues-Fri	No	Open 20 hours, on call 4 (7 days a week)
<b>Fresno</b>	1 per day/10 hrs	2 per day; 1 day shift; 1 lap shift	No	Open for business hours; flying Wed-Sat Swing shift (1600-0200 hrs)
<b>Mesa</b>	4-10 Hour Shifts	4-10 Hour Shifts	No	19.5 hours 0800-0330
<b>Oakland</b>	10 hrs	0	No	40 work hours/week subject to call backs

## Appendix B – Results of Survey (continued)

CY 2013 or FY2013	What is the annual operating budget (most recent year) for your helicopter unit (all inclusive - personnel, consumables, fuel, parts/supplies, vendors, rent, etc.)	Avg. All-Inclusive Cost per Hour to operate a single helicopter	Do you have a goal for helicopter availability? If so, what is your Unit's goal? (e.g. 60% of shift hours, 8 hrs./day, etc.) Does it apply to each helicopter, or the unit as a whole?
Philadelphia	\$ 1.2 Million	\$750	Preliminary discussion for a second shift but no concrete plans yet.
Phoenix	\$11 million (approximately)	Not specified.	We have 10.5 hrs of scheduled flights per day. Avail via call-up all other times.
San Antonio	\$3.8 Million (Rounded)	\$500 / \$350	2,700 Flight Hours. 1 Helo Available with 1 backup
San Diego	Not specified	\$700	goal is two day patrol flights (2 hours each) and three night patrol flights
Dallas	\$2.3 million	Not specified	1 helicopter always available for patrol support
Nashville	Not specified	\$250	No
Oklahoma City	Not specified	\$275	70% of shift, unit as a whole
Fresno	\$1,492,600	\$430	Due to budget constraints since 2010, goal is to fly 5.5 hrs/per 10 hour shift Wed-Sat nights
Mesa	\$ 1.5 million	\$330	6 hours day
Oakland	\$220,000 Parts and Labor / \$300,000 Personnel	\$500	Not specified

CY 2013 or FY2013	Number of Flights	Calls for Service (actual requests for service)	Number of Arrests Assisted	Number of Arrests Solely Due to Helicopter Unit
Philadelphia	800	12,000 <sup>1</sup>	120	10 percent of total arrests
Phoenix	Not specified.	10,582	2,172	Not specified.
San Antonio	2,624	6,595 <sup>2</sup>	601	Not tracked
San Diego	approximately 1,875	6,600	1,646	200
Dallas	3,696 calls plus 69 community presentations, total 3765	3,696 CY 2013	453	Do not tally individually
Nashville	Not tracked	935	Not tracked	Not tracked
Oklahoma City	We track by flight hours - 1,259.4 hrs	1,513	265	Unknown
Fresno	644	2,582	N/A	156
Mesa	Fiscal year-791 flights	Fiscal year-6,952 Total calls	343 total Arrests Assisted	343 total Arrests Assisted
Oakland	256	194	147	53

1. Average about 12 calls per flight hour. This includes both dispatched calls and self-initiated calls.
2. Includes both dispatched and self-initiated calls

## Appendix B – Results of Survey (continued)

CY 2013 or FY2013	Number Vehicles Recovered by the Helicopter Unit	Number of Search and Rescue operations	Number of Vehicle and Foot Pursuits Performed by the Helicopter Unit).
Philadelphia	12-15 Lojack	0	230
Phoenix	16	47	220
San Antonio	64	296	45 (High Speed Chase Only)
San Diego	24	5	87
Dallas	168	33	21
Nashville	Not tracked	131 missing person searches	64
Oklahoma City	58	Currently we do not conduct search and rescue operations. Just searches.	39 Vehicle
Fresno	N/A	N/A	160 (27 vehicle pursuits)
Mesa	21 total vehicles recovered	209 searches for missing persons, 1 technical rescue	38 foot pursuits, 28 vehicle pursuits, total of 66
Oakland	18	Search Only 7	39

CY 2013 or FY2013	Special challenges your unit deals with (e.g., ocean, gulf, mountains, rural, other (please specify).
Philadelphia	No special terrain challenges. Philadelphia and surrounding areas are relatively flat and at sea level. There is low level helicopter traffic in the patrol zone
Phoenix	Used to patrol 20 hours/day, but this has been reduced to 10.5 hrs/day over the last three years to reduce fuel, maintenance and flight crew overtime costs.
San Antonio	Lack of a master contract for parts and supplies for part of the year; several helicopters no longer have a parts manufacturer (Schweizer Helicopters).
San Diego	Ocean, densely populated area; mountains to the east; some rural areas
Dallas	N/A
Nashville	
Oklahoma City	We have high winds in Oklahoma, which tend to be a challenge even on routine calls.
Fresno	Heat, High Density Altitude in summer, Valley Fog in winter.
Mesa	High heat during summer months and High Density Altitude in mountainous areas on outskirts of town.
Oakland	PORT

## **Appendix C – Staff Acknowledgement**

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Mark Bigler, CPA-Utah, CISA, CFE, Audit Manager  
Susan Van Hoozer, CIA, CISA, Auditor in Charge  
Nastasha Smith, Auditor Intern

## Appendix D – Management Response



### CITY OF SAN ANTONIO

P.O. Box 839866  
SAN ANTONIO TEXAS 78283-3966

November 7, 2014

Kevin W. Barthold, CPA, CIA, CISA  
City Auditor  
San Antonio, Texas

RE: Management's Corrective Action Plan for SAPD Helicopter Maintenance

The San Antonio Police Department has reviewed the audit report and has developed the Corrective Action Plans below corresponding to report recommendations.

Recommendation					
#	Description	Audit Report Page	Accept, Decline	Responsible Person's Name/Title	Completion Date
1	<p><b>Alignment of Helicopter Program Components</b></p> <p>The Chief of Police should re-evaluate and formally document the mission and objectives of the Detail and related high-level policy decisions in order to align program components for better effectiveness, efficiency, and economy.</p>	11	Accept	Captain Adolfo Zuniga	February, 2015
<p><b>Action plan:</b>                      Captain Zuniga will work with Command Staff, Supervisors of the Helicopter Detail, Research and Planning personnel, and the Department's Administrative Services Officer in establishing policy to annually re-evaluate and formally document the Helicopter Detail's mission and objectives. In order to align program components for better effectiveness, efficiency, and economy, the Detail's maintenance and fuel budgets, flight hours, and manpower deployment will also be annually reviewed and adjusted to ensure maximum effectiveness and efficiency while maintaining costs within budgetary parameters. Any adjustments will be reflected in the Detail's Standard Operating Procedures.</p>					

Recommendation					
#	Description	Audit Report Page	Accept, Decline	Responsible Person's Name/Title	Completion Date
2	<p><b>Helicopter Replacement Planning</b></p> <p>The Chief of Police should develop a formal life-cycle plan for replacing helicopters in alignment with the Detail's mission. Also, a funding mechanism should be created and implemented to save for future helicopter purchases.</p>	13	Accept	Deputy Chief Roy Waldhelm	May, 2015
<p><b>Action plan:</b>                      Deputy Chief Waldhelm, using the Department's and Helicopter Detail's mission goals and objectives along with the manufactures recommendations, will work with Helicopter Detail personnel to develop a formal helicopter life-cycle replacement plan for the helicopter fleet. In addition, he will create and implement a formal strategic funding mechanism that will save money for future helicopter purchases by working closely with the Department's Administrative Services Officer as well as the City's Office of Management and Budget.</p>					

We are committed to addressing the recommendations in the audit report and the plan of actions presented above.

Sincerely,

  
 \_\_\_\_\_  
 William McManus  
 Chief of Police  
 San Antonio Police Department

NOV 10 2014  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Erik Walsh  
 Deputy City Manager  
 City Manager's Office

11/17/14  
 \_\_\_\_\_  
 Date