KCPD

Internal Audit Unit

Internal Audit Overview

"Vigilance Through Knowing"

Preventative Maintenance Compliance 12-04

March, 2013

Objectives

The objectives of this report are to evaluate actual maintenance performed on department vehicles fleet wide, as related to and compared to the scheduled maintenance for those same vehicles.

- Determine the compliance of maintenance intervals of department vehicles.

Methodology and Scope

- The scope of this report encompasses vehicle maintenance data obtained from the Fleet Operations Unit.
- The primary data source for this report was maintenance data recorded and provided by the Fleet Operations Unit, and documents used by the Fleet Operations Unit for guidelines when performing vehicle maintenance and repairs.

Findings

1. The preventative maintenance schedule for each vehicle is specified to be performed every 5000 miles.
2. Department vehicles were found to have a compliance rate of 53% with the specified 5000 mile or less maintenance interval.
3. Most department vehicles that were not serviced promptly at 5,000 miles did receive service prior to reaching 6,500 miles.
4. The number of department vehicles that exceeded 6500 miles in between services was identified at 5%.

Recommendations

1. It is recommended that the Fleet Operations Unit develop a method to track those vehicles which are serviced at 6,500 miles or more.

For further information please contact: Officer Timothy Harms, 234-5247 timothy.harms@kcpd.org

Endorsement Page

Re: Preventative Maintenance Compliance, 12-04

Unit/Section Supervisor

Unit Commander

Major Young,

Fleet Operations Unit management have taken steps to better improve the rate of compliance with the preventative maintenance schedule. This is submitted for review and forwarding to the Chief for his review. I recommend this audit be presented to the BOPC Audit Committee.

Lee 5/3/13

Division Commander

Recommend forwarding to the COP for his review Prior to being presented to the BOPC Aud.t Committee.

A/Major M Tyler Grant 5/7/13

Bureau Commander

Chief of Police

Approved for forwarding to the Board Audit Committee

chief of Police
5-8-13

Form 220 P.D. (2-2006)

Preventative Maintenance Compliance 12-04

March 2013

Internal Audit Unit

Kansas City, Missouri Police Department

Table of Contents

Table of Exhibits

Scope

The scope of this report encompasses vehicle maintenance data obtained from the Fleet Operations Unit.

Objectives

The objectives of this report are to comprehensively collect and analyze records pertaining to police department vehicle scheduled maintenance, both "A" service and "B" service records.

- Determine the compliance of maintenance intervals of department vehicles

Methodology

The primary data source for this report were maintenance records and other documentation obtained from the Fleet Operations Unit, "A Service" and "B Service" maintenance schedules, and interviews of Fleet Operations Unit personnel.

Discussion

According to fleet the adhering to a regular preventative maintenance inspection of police vehicles is critical to maintaining the police vehicle for long term use.

The preventative maintenance schedule for each vehicle is meant to be performed every 5000 miles. The log for the service is contained on *P.M schedule, Form 5533.* The type of service is broken into two categories, "A" and "B" service. The "A" service essentially involves an oil change and fluids check, combined with a visual inspection for problems. The "B" service is much more extensive and requires more time to complete. The services are not performed at the same time. They are completed according to the listed schedule contained in the P.M. schedule. The locations for the types of service are the #2 garage located at 5215 E. 27th street and the service station pumps located at 1245 Prospect. The "P.M. Schedule" is displayed below in Table #1.

TABLE #1

KANSAS CITY, MISSOURI POLICE DEPARTMENT — FLEET OPERATIONS UNIT — P.M. SCHEDULE — FORM 5533 P.D. (REV. 2-2005)

MILEAGE	P.M.	SERVICE ORDER	MILEAGE	P.M.	SERVICE ORDER	MILEAGE	P.M.	SERVICE ORDER
5,000	A		105,000	A		205,000	A	
10,000	A		110,000	A		210,000	B	
15,000	A		115,000	A		215,000	A	
20,000	A		120,000	B		220,000	A	
25,000	A		125,000	A		225,000	A	
30,000	B		130,000	A		230,000	A	
35,000	A		135,000	A		235,000	A	
40,000	A		140,000	A		240,000	B	
45,000	A		145,000	A		245,000	A	
50,000	A		150,000	B		250,000	A	
55,000	A		155,000	A		255,000	A	
60,000	B		160,000	A		260,000	A	
65,000	A		165,000	A		265,000	A	
70,000	A		170,000	A		270,000	B	
75,000	A		175,000	A		275,000	A	
80,000	A		180,000	B		280,000	A	
85,000	A		185,000	A		285,000	A	
90,000	B		190,000	A		290,000	A	
95,000	A		195,000	A		295,000	A	
100,000	A		200,000	A		300,000	B	

A Service

The "A" service is the first type of maintenance performance performed on a new car and occurs at 5000 mile intervals. This type of service is typically done at 1245 Prospect but can be completed at the #2 garage. It consists of preliminary checks such as ensuring all emergency equipment working and undercarriage inspection for problems, such as transmission leaks. The complete list is displayed in table #2.

TABLE #2

KANSAS CITY, MISSOURI POLICE DEPARTMENT
FLEET OPERATIONS UNIT
"A" SERVICE REPORT

EQUIPMENT # _____ RADIO # _____ DATE: _____ START TIME: _____ END TIME: _____
ODOMETER READING: _____ MILEAGE SERVICE DUE: _____

CHOOSE REPAIR NEEDED FOR EACH ITEMS:

SERVICE COMPLETED OR ITEM OK		REQUIRES IMMEDIATE ATTENTION
PRELIMINARY CHECKS		
☐		POST P.M. CHART
☐	☐	ALL LIGHTS: HEADLIGHTS, BRAKE LIGHTS, TURN SIGNALS, TAILLIGHTS, HAZARD
☐	☐	ALL EMERGENCY EQUIPMENT: IN PROPER WORKING ORDER
☐	☐	VALID STATE PLATES: RENEW UP TO DATE
☐	☐	WINDSHIELD:FOR CRACKS/CHIPS, WIPERS FOR OPERATION/REPLACE, ***APPLY WINDOW TREATMENT IF DUE
☐	☐	ALL VEHICLE INSTRUMENTS: HORN, BLOWER FAN, ELECTRIC MIRRORS AND WINDOWS
UNDERCARRIAGE INSPECTION		
☐	☐	FRONT SUSPENSION CHECKS: TIE ROD ENDS, BALL JOINTS, IDLER ARM, PITTMAN ARM, UPPER / LOWER CONTROL ARM BUSHINGS, STABILIZER BAR AND END LINKS, FRONT SHOCKS
☐	☐	REAR SUSPENSION AND REAR END: STABILIZER BAR AND END LINKS, REAR COIL SPRINGS FOR CRACKS OR SAGGING, REAR SHOCKS, CHECK PLAY OR REAR AXLES
☐	☐	EXHAUST SYSTEM: LEAKS, CRACKS, MISSING BOLTS, CLAMPS, HANGERS OR BRACKETS
☐	☐	DRIVE LINE: REAR AXLE FOR LEAKS, UNIVERSAL JOINTS, CONSTANT VELOCITY JOINT BOOTS FOR CRACKS IF EQUIPPED
☐	☐	ENGINE: INSPECT FOR OIL OR COOLANT LEAKS, ENGINE SUPPORTS INSPECT DRAIN PLUG ***CHANGE OIL AND FILTER
☐	☐	TRANSMISSION: INSPECT FOR LEAKS, MOUNTING
☐	☐	BRAKES: INSPECT FRONT AND REAR BRAKE PADS/SHOES FOR MINIMAL THICKNESS, ALL BRAKE LINES/FLEX HOSES FOR LEAKS, BRAKE CALIBERS/CYLINDERS FOR LEAKS, BRAKE ROTORS/DRUMS FOR DAMAGE/WEAR

CHECK ALL TIRES:

L/F	R/F
☐ 7/32 OR >	☐ 7/32 OR >
☐ 4/32 TO 6/32	☐ 4/32 TO 6/32
☐ 3/32 OR <	☐ 3/32 OR <

L/R	R/R
☐ 7/32 OR >	☐ 7/32 OR >
☐ 4/32 TO 6/32	☐ 4/32 TO 6/32
☐ 3/32 OR <	☐ 3/32 OR <

***PLEASE NOTE TIRE IF 3/32 OR <

UNDER HOOD CHECKS / MISC.		
☐		ALL FLUID LEVELS AND BATTERY: CHECK AND TOP OFF FLUIDS AS NEEDED, CLEAN BATTERY AS NEEDED (DO NOT FILL MAINT. FREE BATTERY)
☐	☐	CHECK ALL BELTS/BELT: FOR WEAR AND CRACKING
☐	☐	AIR FILTER: CHECK FOR PROPER AIR FLOW

PARTS CHARGED OUT TO VEHICLE:

1. _____	5. _____
2. _____	6. _____
3. _____	7. _____
4. _____	8. _____

DEFICIENCIES NOTED:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

MECHANIC/HRS	OPERATOR'S SIGNATURE
_____ / _____	
_____ / _____	
_____ / _____	SERIAL #
_____ / _____	

FORM 5251 (REV. 1-2009)

B Service

The "B" service occurs for the first time at 30,000 miles. This type of service is performed at the #2 garage. The service includes a road test, a more thorough undercarriage inspection and inspection of the brakes. The complete list is displayed below in table #3.

TABLE #3

Vehicle Number _____

Date _____

Mileage _____

KANSAS CITY, MISSOURI POLICE DEPARTMENT
FLEET OPERATIONS UNIT

"B MAINTENANCE SCHEDULE

Auto Servicer/Mechanic _____

O	Service Performed	X	Repairs Needed
N/A	Not Applicable		Not Checked

Write Auto Mechanic's number beside the section name as each section is complete

Complete each section before proceeding to next section

Diagnostic Road Test

Road test _____

☐	Check drivability during road test, if a problem exists, perform appropriate decal adjustments to specifications shown on Vehicle Emission Control information or perform warranty repair
☐	Throttle operation and return to idle
☐	Check for squeaks and rattles
☐	Brakes, check for out of round rotors
☐	Steering control
☐	Transmission performance
☐	Transfer case
☐	Safety belts and latches (includes warning system)
☐	Instruments for proper operation
☐	Parking brake operation (includes warning lamp)
☐	Steering column lock and cylinder operation
☐	Starting of engine in park and neutral
☐	Horn
☐	Windshield wipers and washers
☐	AM/FM radio operation
☐	Heater/Air conditioner, defroster and ventilation system and blower (all speeds)
☐	Measure and record air conditioner evaporator output temperature _____
☐	Check operation of tilt wheel and cruise control, if equipped
☐	Red Lights, wig-wags, all emergency equipment
☐	Headlamps
☐	Taillamps

Form 5527 P.D. (Rev. 10-2005)

Vehicle Number _____

Date _____

"B MAINTENANCE SCHEDULE

- ☐ Turn signals
- ☐ Hazard warning flashers
- ☐ Marker lamps
- ☐ Instrument panel lights
- ☐ Check windshield for chips in glass
- ☐ Air bag readiness light on air bag equipped vehicles
- ☐ Check engine light, service as needed

Undercarriage

Suspension _____
- ☐ Check Tie-rod ends for looseness-grease if possible
- ☐ Inspect lower/upper ball joints and control arms for wear, grease if possible
- ☐ Inspect for leakage at steering gear/rack and pinion, grease, if possible
- ☐ Front shocks/struts for leaks – worn insulators
- ☐ Stabilizer bar and bushings and end links for looseness
- ☐ Coil springs for cracks – torsion bar bushings
- ☐ Cross member for damage
- ☐ Rear stabilizer bar and attaching hardware
- ☐ Rear shocks for leakage - operation
- ☐ Condition of rear springs

Drive Line _____
- ☐ Check axle seals for leaks
- ☐ Check fluid in rear axle
- ☐ Inspect front and rear universal joints for free bearing movement
- ☐ Inspect constant velocity joints, boots for cracks if equipped

Exhaust _____
- ☐ Inspect system for cracks, leaks, missing bolts or clamps, exhaust shielding, hangers and brackets for damage or wear

Engine _____
- ☐ Check oil pan and drain plug for oil leaks
- ☐ Check valve covers and front and rear main seals for leaking
- ☐ Inspect oil sending unit for leaks
- ☐ Change oil and replace filter

Fuel System _____
- ☐ Replace fuel filter, if frame mounted
- ☐ Inspect fuel vapor evaporation system for damage or leaks

Vehicle Number _____

Date _____

"B MAINTENANCE SCHEDULE

Brakes _____	☐	Check brake flex hoses for cracks, fluid leaks
	☐	Front brake pads and rotors for excessive wear or glazing inspect front rotors for minimum thickness
	☐	Rear brake pads and rotors for excessive wear or glazing inspect rear rotors for minimum thickness
	☐	If bearing is non greasable, spin front tires quickly by hand to make sure tire turns smoothly without noise from wheel bearing
	☐	Check wheel cylinders or calipers for leaks
	☐	Rear drum brake attaching spring, return springs, and related hardware, if equipped
	☐	Check park brake cables for binding or wear and parking brake linings
Tires _____	☐	Inspect for correct size
	☐	Inspect for cuts and excessive wear
	☐	Check tire pressure on all tires
Transmission _____	☐	Inspect transmission casing, lines and seals for leakage
	☐	Prepare cooling lines, flush transmission fluid and change or install new in-line filter
	☐	Inspect shift linkage and cable for proper operation

Underhood Inspections

Brakes _____	☐	Master cylinder fluid level
	☐	Leakage at master cylinder
P/S _____	☐	Power steering fluid level
	☐	P/S pump for leakage
	☐	P/S pressure and return hoses for cracks or leakage
	☐	Flush P/S system
Fluids, etc. _____	☐	Check all belts for proper tension and excessive wear
	☐	Clean battery terminal ends and service as required
	☐	Check antifreeze level in radiator (not overflow tank) and record freezing point _____
	☐	Pressure test and inspect cooling system for leaks
	☐	Check fan clutch operation and/or electric cooling fan
	☐	Use compressed air and clean out radiator fins
A/C _____	☐	Check compressor operation, service as needed
	☐	Check A/C hoses for leaks, service as needed

Vehicle Number _____

Date _____

"B MAINTENANCE SCHEDULE

- ☐ Inspect pulleys for proper positioning
- ☐ Inspect secondary wiring to include plug wires for poor connections, cracks, etc.
- ☐ Inspect spark plugs condition, replace as necessary
- ☐ Inspect air filter and duct systems
- ☐ Service crankcase vent filter if equipped
- ☐ Check fuel rails and injectors for leaks
- ☐ Inspect vapor storage canister for broken lines, bad purge control valve if mounted under hood
- ☐ Check PCV valve for free movement, replace as required

Final Road Test

- ☐ Lubricate all door locks, hinges and handles for smooth operation
- ☐ Update P.M. chart
- ☐ Steam clean engine
- ☐ Final Road Test to check all completed repairs and service performed
- ☐ Final check of transmission fluid level, top off if needed.

Interval Compliance

Some type of service occurs every 5000 miles. A one year sample of data was taken in order to determine if the schedule of maintenance was being followed. The data that was provided included information such as the vehicle number, the date of the service and the mileage of the service. It did not include the scheduled maintenance interval that was due. The limitation of only having the actual mileage of the vehicle that was being serviced would not allow a definitive answer to how much over the vehicle was for the scheduled maintenance. However, using the 5000 mile interval between services did allow a basic inspection of the frequency of service of the listed vehicles.

There were 1761 services performed that had a previous service entry. The amount of mileage between these services was calculated and produced the following information. There were 929 instances of less than 5000 miles between services intervals. There were 527 instances of 5001- 5500 miles between services intervals. There were 149 instances of 5501- 6000 miles between services intervals. There were 62 instances of 6001- 6500 miles between services intervals. There were 94 instances of more than 6501 miles between service intervals.

Chart 1

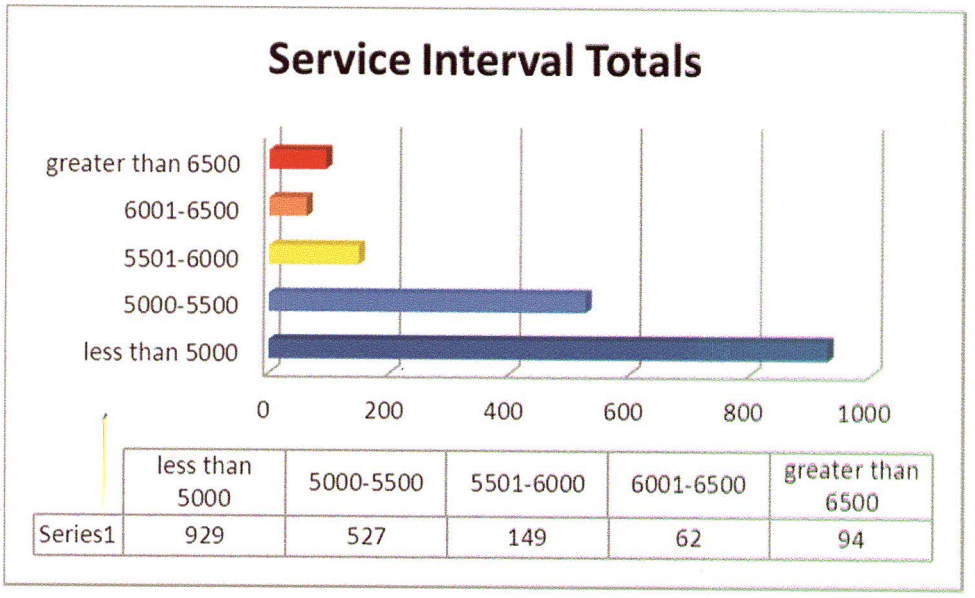
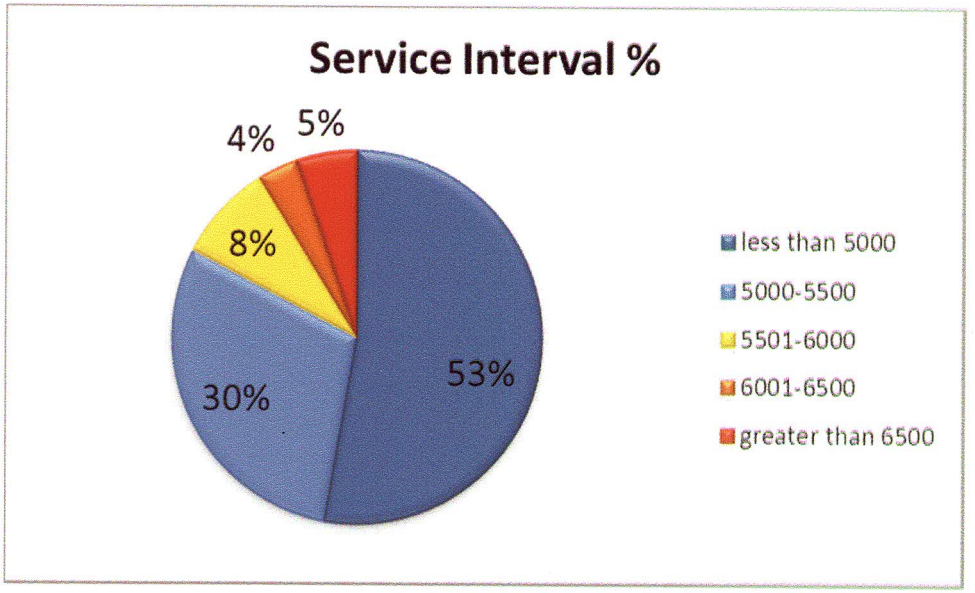
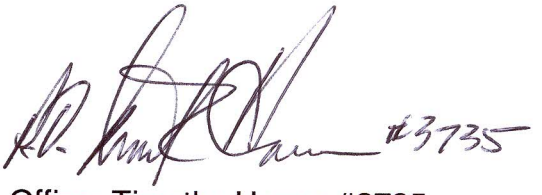


Chart 2



Recommendations

It is recommended that the Fleet Operations Unit develop a method to track those vehicles which are serviced at 6,500 miles or more. Doing so would allow the potential to identify if specific vehicles or department elements are consistently lax in obtaining scheduled service. If services over 6,500 miles are randomly dispersed throughout the fleet, it is unlikely any long term negative impact would occur. If specific vehicles or department elements are consistently not adhering to service schedules, the potential for unsafe vehicles or vehicle damage due to neglect or lack of timely service would likely be much higher. Tracking of vehicles serviced over 6,500 miles would allow specific vehicles or department elements to be identified so that corrective action could be taken.



Officer Timothy Harms #3735

Internal Audit Unit

EXHIBIT 1

"Management's Response Memorandum"

RECEIVED
LOGISTICAL SUPPORT
DIVISION
DATE: 3-22-13
ITEM: #1

MEMORANDUM

March 19, 2013

MAR 21 2013
9
Executive Services Bureau
RECEIVED
MAR 19 2013
CHIEFS OFFICE

TO: Major Robert Kuehl, Executive Officer, Chief's Office

FROM: Thomas Gee, Manager, Internal Audit Unit

SUBJECT: Request for Response to the Preventative Maintenance Compliance Audit, 12-04

Sir,

Attached please find the Preventative Maintenance Compliance Audit, 12-04. I am requesting it be forwarded in the following manner for written response if any:

1. To the Executive Services Bureau and down to the Fleet Operations Unit.
2. The appropriate personnel in the Fleet Operations Unit should craft their written response and return the audit through their chain of command back to you in the Chief's Office.
3. I then request you send it back to me so we may prepare the audit for submission to the Chief.

By written policy the auditee has 30 working days to submit a written response. In this case their response would be due in the Internal Audit Unit on or before **Tuesday, April 30, 2013.**

Respectfully submitted,

Thomas Gee

MEMORANDUM

April 18, 2013

To: Major Bryon Price, Commander, Logistical Support Division

From: Captain Don Sight, Commander, Fleet Operations Unit

Subject: Response to the Preventive Maintenance Compliance Audit, 12-04

Major Price,

Internal Audit completed an audit regarding preventive maintenance intervals within the FOU. (Attached) The audit brings to light an item (tracking mechanism) we have been working to implement since my assignment to FOU in late 2011.

Currently "A" services are required every 5000 miles on department vehicles while "B" services are scheduled for every 30,000 miles.

Beginning in January 2012, FOU personnel have notified me of every service (A and/or B) completed when the vehicle serviced was in excess of 1000 miles or greater. This parameter is even less than the 1500 mile overage recommended during the audit. (It should be noted – according to the audit – over 90% of vehicles receive service within 6000 miles).

Referencing the tracking mechanism, our department currently utilizes Fuel Master fueling system. We did this due to the fact the city of KCMO wanted to utilize Fuel Master as its fueling system as well. While mileage may be tracked with the Fuel Master system, it is not a "live" system and it does not communicate with FOU's M-5 fleet management software system. During the last year, FOU has been working with KCMO IT to build an interface that will allow Fuel Master to be compatible with the M-5 software – allowing us to generate reports regarding services, etc. We anticipate this to be operational by the end of the current calendar year.

Don Sight

Forwarded to Internal Audit Unit for information & completion of audit for submission to Chief's office
A/Maj Scott Adam 307 4/24/13

DC. Higgins,
The Fleet Operations Unit will continue to improve the preventative maintenance tracking System.
Major Bryon Price 04/20/2013

Forward to the Exec. Officer, Chief's Office
A/DC [illegible] 4/24/2013
CC LSD: Fleet