



El Dorado County Emergency Services Authority

Policy Subject Matter: **Medic Unit Vehicle Maintenance**
Review Date:
Revision Date: **07.28.2010**
Creation Date: **12.01.1998**

I. Policy:

The El Dorado County Emergency Services Authority (JPA) and its member agencies shall work towards keeping our medic units in a mission-ready status.

II. Purpose:

The purpose of this policy is to ensure that minimum routine vehicle maintenance is conducted and documented by each provider agency in order to keep the medic unit fleet in a safe, response-ready condition.

III. Procedure:

1. Vehicle Preventive Maintenance:
 - a. Vehicle preventive maintenance shall be performed in accordance with the recommendations outlined in the manufacturer's warranties.
 - b. A District Fire Chief may develop a supplemental schedule of periodic preventive maintenance based on fleet experience.
2. Daily Inspections:
 - a. Assigned medic unit crews shall complete and document a daily vehicle inspection utilizing the Daily Vehicle Inspection Report, Attachment A. Descriptions for the Daily Vehicle Inspection Report can be found in Attachment B, Ambulance Inspection Checklist Definitions.
 - b. A Daily Vehicle Mileage/Hour Report, Attachment C, shall also be completed.
 - c. Deficiencies and mechanical failures noted on the daily inspection which cannot be corrected by personnel conducting the inspection shall be immediately reported for correction according to Provider agency procedures.
 - d. Any vehicle found not to be mechanically response-ready shall be designated "out of service" until adequate corrective measures have been completed. If a significant delay is anticipated, a reserve unit shall be brought into service in the interim. Examples of "out of service" criteria can be found in Attachment D, Out of Service Criteria.
 - e. The District shift supervisor shall notify the Emergency Command Center (ECC) immediately whenever a vehicle is designated "out of service" and again at such time the vehicle is brought back into service.
 - f. Information regarding deficiencies or mechanical failures will be reported to the JPA, and the JPA will forward on the information as needed.
 - g. Monthly Maintenance, Repairs and Comments Report, Attachment E, are to be completed to appropriately record monthly maintenance, repairs and comments.

3. Vehicle Repairs:
 - a. Repairs shall be undertaken immediately to correct any deficiency discovered during inspection, preventive maintenance or as a result of mechanical failure.
 - b. The provider agency may perform preventive maintenance and vehicle repairs to the limit of the agency's mechanical ability.
 - c. Repairs and maintenance that cannot be performed by the provider agency shall use commercial repair facilities that have been approved by the JPA. The JPA will furnish Provider agencies with a list of authorized commercial repair facilities. A Provider agency may use another suitable repair facility when an emergency situation dictates.
4. Documentation:
 - a. Documentation of daily and monthly vehicle inspection and preventive maintenance shall be forwarded at each month's end to the District Fire Chief or designee for review.
 - b. Completed and reviewed reports, which include the following below, shall be forwarded by the District Fire Chief or designee to the JPA Administrative Office no later than the 3rd Wednesday of the following month.
 - Daily Vehicle Inspection Report, Attachment A
 - Daily Vehicle Mileage/Hour Report, Attachment C
 - Monthly Maintenance, Repair and Comments Report, Attachment E

AMBULANCE INSPECTION CHECKLIST DESCRIPTIONS

1. **Walk-A-Round** - Visually inspect the vehicle exterior for any damage.

2. **Tire and Wheel Inspection** - Inspect the conditions of tires paying attention to any side wall damage, cuts, or abrasions. Inspect for adequate tread depth and proper inflation. Use tire gauge to verify correct pressures. Proper tire pressures can only be obtained when tires are cold. Minimum acceptable tread depth is 4/32" on front tire and 2/32" on rear tires when measured in any major groove. Be sure to retighten the lug nuts on all chassis after the first 100 miles. Refer to your owner's manual. Inspect valve stems for damage and leaks.

3. **Engine Oil Level** - Check the oil level with the vehicle on level ground prior to cranking the engine. Never check the oil level with the engine running. If the engine has been running, wait approximately 15 to 20 minutes to allow all oil to drain fully back down to the oil pan. Maintain the oil level between the "L" (low) and the "F" (Full) marks on the dip stick. Never operate the engine with the oil level below the (low) level or above the (full) marks. Always obtain two readings before adding oil.

4. **Radiator Coolant Level** - This vehicle is equipped with a radiator surge tank. The proper coolant level is when the surge tank indicates full cold or hot on the sight glass. The level can also be checked by removing the pressure cap on the surge tank with the engine cold. When checking in this manner, the level should be at least 2 inches below the filler neck to allow for heat expansion. **WARNING** - never remove the radiator cap when the cooling system is hot. If the coolant level is found to be low, check for leaks and advise supervisor.

5. **Power Steering** - Check the engine at the normal operating temperature and **NOT RUNNING**. Fluid must be maintained between the "ADD" and "Full" marks on the dipstick.

6. **Automatic Transmission Fluid Level** - Hot Check- because the fluid level rises as temperature increases, the fluid must be hot to ensure an accurate check. Bring the vehicle to a level surface. Ensure that the engine is at low idle rpm. Put the transmission in N (Neutral). Apply the emergency brake and/or parking brake.

Chock the wheels or take any other steps necessary to keep vehicle from moving. Check fluid level reading. Repeat the check procedure to verify the reading.

7. **Engine Serpentine Belt** - The Serpentine belt operates the alternator, cab air conditioning compressor, and fan. The belt is equipped with an automatic tensioner. With the engine off, check for cracks, frays, loose fibers, or visible signs of wear. With the engine running listen for unusual noises of the belt being loose. Report any abnormal condition.

8. **Radiator and Heater Hoses** - Inspect for good condition, no signs of chaffing or abrasions, pliable and soft, no signs of leakage and hose clamps tight.

9. **Fluid Leaks** - Check for signs of fluid puddles, or dripping fluids on the ground under the engine, or the underside of the engine, transmission or axles.

10. **Brake Fluid Level** - The fluid level should be up to the flange that surrounds the reservoir. Do not fill the master cylinder to the top of the reservoir. If the system is found to low notify your supervisor.

11. **Windshield Washer Fluid** - Maintain minimum level of half full.

12. **Oil Pressure** - If the light fails to go out or pressure is not indicated on the gauge within fifteen seconds, immediately stop engine and report to supervisor.

13. **Water temperature** – Check water temperature gauge to see if the vehicle is running too hot and/or too cold.

14. **The Voltmeter** - This gauge should indicate 13.6 to 14.3 volts when the engine is running and the charging system is operating normally. If the emergency warning lights are activated and the vehicle is parked, the fast idle must be activated to maintain 13.6 to 14.3 volts.

Voltage readings less than 12.8 volts may indicate a charging system malfunction. If the malfunction is not corrected, power to operate lights and accessories is being robbed from the battery bank until they are dead. If this condition exists turn off all possible lights and accessories to prolong life of the battery pack.

15. **The Ammeter** - The ammeter indicates the rate of charge of electric current supplied by the alternator to the batteries, or the rate of discharge from the batteries. When the batteries are fully charged, a very slight charge (5 to 15) will be indicated during normal vehicle operation. A continuously higher reading without warning lights activated, indicate that the batteries are becoming weak. Also continuous (-) discharge reading indicates that power is being robbed from the battery pack. Never allow the ammeter to remain in the (-) discharge region for an extended period of time. Reduce your electrical load immediately by turning off the lights and accessories.

16. **Air Pressure Gauge** - (If Applicable) Normal operating range of the air system is at 100 to 125psi. If the air pressure drops to below 62-68 psi, a Low Pressure warning light and buzzer should activate. The air system supplies the rear air ride suspension, parking brake, cab seats, and hood mounted air horns.

17. **Fuel Level** - Fuel level should be maintained above $\frac{3}{4}$ full.

18. **Air Tank** - (If Applicable) If the vehicle is equipped with a heated, automatic moisture ejector it will be at the lower forward end of the air reservoir. The ejector should automatically eject a small volume of air every time the air compressor cuts in and again when the compressor cuts out. This is not a visual check, only audible.

19. **Steering Play** - Check for the excessive play in the steering linkages; it should have less than 4% lash with an 18 inch steering wheel.

20. **Heater / Defroster/ Air Conditioner** - Check to see all the Heater / Defroster / Air Conditioners are working. The air conditioner should also be used periodically during winter months to keep all seals and valves properly lubricated.

21. **Hydraulic Brake Check** - (If Applicable) With the engine running, pump the brake pedal three times. Then apply firm pressure to the pedal and hold for several seconds. The pedal should

continue to be firm. If the pedal drifts toward the floor, there may be leak: or other problem. If so, place the vehicle out of service and advise supervisor.

22. **Parking Brake Pedal** - (If Applicable) The parking brake mechanism appears to be in working order and can be applied and released.

ALWAYS BRING THE VEHICLE TO A COMPLETE STOP PRIOR TO PLACING THE TRANSMISSION SHIFT SELECTOR IN NEUTRAL AND APPLYING THE "PARKING" BRAKE. The purpose of this brake is to hold the vehicle in the parked position. The parking brake should not be used to brake the vehicle during normal driving.

23. **Water in Fuel** - (If Applicable) Visually inspect the level of fuel in the fuel filter/water separator. As restriction in the filter increases the fuel level will rise in the clear fuel bowl. If the level is at or near the change filter line, notification should be made in order to have the filter change scheduled. Vehicle is equipped with warning light indicating water in fuel. If light activates; notify supervisor.

24. **Lighting Non-Emergency** - Check to see that all lights illuminate and are clean. Make sure headlights function on both high and low beams. Verify operation of turn signals, taillights, brake lights, back up lights, and four way flashers. Verify operation of dome lights in cab and ambulance module.

25. **Lighting, Emergency** - Verify proper operations of all emergency warning lights. Verify all "switch on" indicators illuminate. For warning lights to activate, the master emergency light switch must be turned on. The sequence allows the operator to pre-select (turn-on) the warning lights desired. When the vehicle is started the operator only turns on the "Emergency Master" switch and warning lights will automatically turn on one at a time until they all illuminate. When the "Emergency Master" is turned off~ the warning lights will automatically turn off one at a time until they are all off.

An electrical load manager is also incorporated into the emergency warning light system. The load manager will determine if the alternator and battery pack is properly maintaining adequate system voltage. When the system voltage drops below an acceptable level the load manager will automatically start to turn warning lights off to reduce the rate of discharge to the battery pack. If a low voltage condition is noted while driving the vehicle it will be the responsibility of the vehicle operator to switch the lighting off and reduce the electrical load to an acceptable level.

26. **Fast Idle** - The fast idle will operate both manually and automatic. Turn the "Fast Idle" switch on to verify operation. The tachometer should indicate approximately 1300-1500 RPM's and the voltmeter should indicate approximately 13.8 to 14.3 volts with OT without warning devices and other electrical accessories operating. The fast idle should deactivate when you depress the brake pedal or if the transmission shift selector is moved from neutral or PARK position. The automatic fast idle control will activate whenever the system voltage is reduced to 12.8 volts for at least one minute. The automatic fast idle will remain on for a minimum of 10 minutes and until 13.0 volts is achieved.

STANDARD OPERATING PROCEDURE WILL BE TO ACTIVATE THE "FAST IDLE" BEFORE EXITING THE CAB ANY TIME THE ENGINE WILL BE LEFT RUNNING FOR MORE THAN FIVE MINUTES OR ANY TIME EMERGENCY LIGHTS ARE OPERATING WHILE ON SCENE

27. **Fire Extinguisher** - The unit is equipped with ABC dry powder fire extinguishers. Verify they are fully charged and that they are securely mounted. Also check the date.

28. **Shoreline Plugs** - Test proper operation of all shoreline connections. The shoreline plug is to be plugged in anytime the ambulance is parked and the engine is not running. The plug should be manually disconnected by the driver prior to opening the cab door.

29. **Floor Covering** – Should be clean and free of defect such as tears and rips and not to interfere with brake and accelerator pedals.

30. **Vinyl Surfaces** - be clean and free of defect such as tears and rips.

31. **Keys / Security** – One set of keys – fobs for each crew member. One set of keys in back-up location (confidential). Check door release button.

32. **Batteries** – Ensure cables and wires are securely attached and free of corrosion and leaks.

33. **Door Latches and Hinges** – Check to ensure that door latches and hinges are working properly and lubricated.

34. **Door Gaskets** – Check door gaskets for signs of tears and rips and suitable lubrication and pliability.

Information

Extended Engine Idling - Avoid unnecessary idle either at normal or high speed settings in hot weather. Prolonged engine idle in high temperatures can result in increased fuel tank pressurization.

Frequently, out of habit operators will leave vehicles running or idling for extended periods of time when unnecessary. Engine idling should be allowed for the amount of time needed to load/unload the crew or patient or during situations of extreme weather. However, at other times while checking out the vehicle, re-stocking and in general just standing by, the vehicle engine should be shut off to save unnecessary wear and tear. When a diesel engine is allowed to idle for extended periods of time, the engine operating temperature drops, resulting in less efficient combustion of fuel.

The current LOW SULPHUR fuel washes down the cylinder walls, and dilutes the oil viscosity which extremely elevates the wear of the internal engine components. Extended periods of low RPM idle can clog injector nozzles and reduce engine acceleration and performance. Also during severe conditions, turbo slobber can occur and will result in raw motor oil being pumped straight out the exhaust pipe. Reduction in idling will help, increase the length of time between oil changes, and reduce operating expenses, increase engine performance and engine life. It will also increase the length of the warranty due to it being based on engine hours.

When refueling fuel tank, do not fill beyond the first automatic fuel nozzle shut-off click. Refuel tank when vehicle is parked on level ground.

El Dorado County Emergency Services Authority (JPA)

Daily Vehicle Mileage/Hour Report

Agency: _____

Month/Year: _____

Vehicle AVICN#: _____

Vehicle Lic. #: _____

Date	Ending Mileage	Ending Hours	Gallons of Fuel	Quarts of Oil	Location at end of day	Driver's Name/Comments
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Out of Service Criteria

1. Engine System

- a) Major coolant leak.
- b) Engine unable to maintain proper temperature (i.e. overheating).
- c) Major oil leak.
- d) Low engine oil pressure (gauge in red zone or low oil pressure indicator).
- e) Contaminated coolant or oil (i.e. oil in coolant, fuel in oil, coolant in oil, or coolant in transmission fluid).
- f) Fuel leak.

2. Transmission

- a) Automatic transmission overheats in any range.
- b) Transmission has major leak.
- c) Transmission fluid contaminated with coolant.

3. Electrical System

- a) Alternator not maintaining appropriate voltage.
- b) Battery gassing excessively.
- c) Headlights out.
- d) More than 3 emergency lights are out.
- e) Siren not working.

4. Braking System

- a) Vehicle pulling when brakes applied.
- b) Parking brake will not hold vehicle.
- c) Shoes, drums, pads worn beyond manufacture's minimum specifications.
- d) Shoes or pads with oil contamination
- e) Exclusive brake stroke.

5. Chassis, Axles, Steering and Suspension Systems, Drive Line, Wheels and Tires

- a) Tires cut to cords, audible air leak, flat or excessive low pressure.
- b) Tires with tread depth less than 4/32 on steer axles.
- c) Tires with tread depth less than 2/32 on drive axle.
- d) Cracked or broken springs.
- e) Cracked or broken spring hangers.
- f) Loose steering system components.
- g) Cracked rims.
- h) Missing lug nuts.
- i) Major leaks on power steering system.
- j) Use of tow truck to free a stuck vehicle.

El Dorado County Emergency Services Authority (JPA)

Monthly Maintenance, Repair and Comments

Month/Year: _____ AVICN# _____

Inspect. Date	Maintenance/Repairs/Comments:	Date and Completed By:
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		