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MAINTENANCE STANDARDS OF THE ALABAMA FORESTRY COMMISSION

A primary duty of every Commission employee is the proper care and maintenance of equipment assigned to him or her. Assurance that equipment is properly maintained is a primary responsibility of the supervisor at each organizational level. The purpose of these instructions is to establish maintenance standards for automotive and other associated equipment. Knowledge of these standards is essential for both the operator and supervisor. The standards stated herein are **minimum** requirements and conditions not meeting these standards are not acceptable.

It is realized that the maintenance standards here in are not comprehensive enough to cover all component parts or conditions encountered in the daily use of vehicle and associated equipment. They will, however, serve as a guide in evaluating such instances.

The owner's/operator's manual will be used to guide proper service of vehicles. Vehicles normally used in field conditions will be serviced under guidelines for extreme use while other vehicle service will fall under normal use guidelines.

***NOTE:* Operators are responsible for continuous daily checks, maintenance, and other instructions as stated in the owner's/operator's manual.**

A formal inspection of equipment will be conducted:

- Monthly – operator(retain original copy in vehicle)
- Semi-annually – county manager/unit supervisor(retain copy in county, original to region)
- Annually – regional/division staff(retain copy in county, copy in region, original to state office)

Use form FC-26 for automotive equipment and form FC-27 for tractor plow units. Operators/supervisors will ensure that all discrepancies are corrected expeditiously. Files will be maintained for last complete fiscal year as well as current fiscal year.

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1. ENGINE AND UNDER HOOD

A. Cleanliness

It is practically impossible to make a satisfactory inspection until the equipment has been properly cleaned; therefore, thorough washing and cleaning should precede each inspection. Washing will also be accomplished as needed at other intervals depending on the type of equipment and conditions under which it is operated.

One of the chemical cleaning compounds most commonly used for cleaning dirty parts, motors, etc. is Gunk. After allowing fifteen to thirty minutes for penetration, rinse thoroughly with water. Never use gasoline or other highly inflammable solvents as cleaners. Protect generator or alternator during cleaning operation. All electrical wiring will be wiped clean after use of any degreasing compound.

Caution: Late model vehicles are equipped with many components made of plastic and sensitive electronic components. Do not use high temperature, high pressure steam cleaners on or around these components.

B. Radiator

a. Open Cooling Systems. Check coolant level daily. Keep the system flushed and free of rust, grease and oil. Keep grill and housing free of leaves, grass, dirt and other debris. On tractors, be sure front screens are open. Radiator mountings, bolts and shroud shall be aligned and tight. Overflow pipe shall be open and radiator cap secure. Pressure systems shall be equipped with a cap of proper capacity to prevent loss of coolant and overheating. System shall be equipped with prescribed thermostat and free from leaks.

b. Closed Cooling Systems - Recovery. Check coolant level at the reserve tank (normally a plastic tank or bottle). The reserve tank will have a hot and cold level. The coolant level should read at one of these levels depending on coolant system temperature. The rubber tube going to the radiator from the reserve tank must be kept open and securely fastened as well as the overflow tube. The radiator cap arrow must be aligned with the overflow tube.

Caution: Never open a cooling system that is hot, especially a closed system that has high pressure. You could be severely scalded. Hoses that are soft, chafed or blistered will be replaced.

c. Antifreeze - The cooling system on all equipment will be inspected and conditioned before antifreeze is installed. Check operator's manual for correct type antifreeze, as various manufactures require different types. Never put antifreeze in a dirty or leaky system. Attach tag or label near filler cap showing date installed and degree of protection and record same information on FC-26 or FC-27. Test coolant periodically during the winter to determine its protective freezing level. Vehicles equipped with air conditioning must be kept at manufacturers' prescribed mixtures for summer and winter operations.

C. Engine Oil

Engine oil wi11 be changed according to recommendations of the manufacturer as set out in the Operator Manual. Additional changes may be required when operating under extremely dusty conditions. Engine oil will be kept at proper level.

a. Crankcase Breather - All types are to be serviced at each oil change and kept open in order to prevent excessive oil usage and build up of sludge deposits on internal engine parts.

b. Filler Cap - This cap will be serviced at each oil change or as recommended in Operator Manual.

D. Air Cleaners

a. Vehicles - All truck and automobile air cleaners will be checked and serviced every 1,500 miles under normal operating conditions or every 500 miles under dusty conditions. For dry element types, remove element and extract dust and dirt by gently tapping against a firm surface being careful not to distort its shape. If this procedure does not clean the element sufficiently to permit passage of light, the element will be replaced. Do not attempt to clean by using compressed air. Clean housing thoroughly before replacing element. Be sure element is positioned properly to prevent air leaks.

b. Tractors - air cleaners shall be serviced every eight hours of normal operation and every four hours of operation under extremely dusty conditions. When servicing, remove and clean cup, clean breather cap and swab out intake tube.

NOTE: Air cleaner connections and mountings must be tight to prevent unfiltered air from entering the engine. <u>Under no condition</u> will engines be operated without proper air filters.

E. PVC Valves

- will be replaced and all emission control systems will be maintained according to the manufacturer recommendation.

F. Batteries

a. Battery Care - Proper care of the battery will eliminate many electrical problems. Neglect produces failure of ignition system components, unreliable performance of mobile radios and other electrical accessories and unsatisfactory performance of the vehicle. Keep the battery cable, terminals and case clean. Battery terminals may be given a light coat of oil to retard corrosive action. Battery must be kept tightly secured in case with proper mounting frames. Inspect cable for condition of insulation and connectors for tightness. Replace when necessary. Never use an open flame near the battery. Never hammer cables on or pry them off battery terminal posts. Loosen clamp nuts and spread the clamp enough so terminal can be lifted off. *Keep battery at full charge to prevent freezing during winter operation.*

b. Open Batteries - Check the electrolyte (battery solution) weekly. It should always cover the battery plates. The proper level is 3/8 inch above the plates. Raise the solution level by adding clean (distilled, rain or acceptable hydrant) water. Most hydrant water contains properties injurious to a lead-acid type battery and should not be used unless definitely known to be acceptable for this purpose. If water is needed more than once weekly, check for leaks or cracks in the battery case. If none are found, the voltage regulator should be checked and adjusted by a mechanic.

NOTE: Guard against overfilling the battery. This causes the electrolyte to bubble over and corrode terminals, cables and carrier. Keep filler caps tightly in place and vent holes open except when instructions on filler caps require removal or loosening during recharging.

G. Alternators, Voltage Regulator

Testing, servicing and maintaining alternators cannot be handled the same as the old generator systems. Alternators, regulators and their electronic components will not be tampered with except in emergencies. A trained mechanic should check these items for performance.

WARNING - Alternator-equipped vehicles have special requirements because of the voltages developed, polarity and the manner in which they are connected.

a. If a jump start or booster battery is used for starting, be sure the cables are connected 12 volt to 12 volt, positive-to-positive and negative to a safe ground to prevent shorting. Vehicles should not be touching.

b. Use proper procedures when connecting jumper cables. Be sure of polarity. Check operator's manual for recommended procedures.

c. Battery cables are to be disconnected before welding on truck.

d. OPERATORS are cautioned to keep their hands clear of all alternator connections while the engine is running.

Failure to comply with these rules may result in serious injury to the OPERATOR or extensive damage to the equipment or both.

H. Ignition Wiring

– Check wiring for loose connections. Excessive dirt and grease must be removed. Ignition cables will be kept clean to prevent shorting. Under certain weather conditions, cables may eventually become hard and cracked requiring replacement. Cable terminals should fit snugly in socket of distributor cap and rubber nipples should cover connections at distributor and coil. Terminal ends shall be free of corrosion. Be sure each cable is securely fastened to spark plug terminal. Distributor rotor, cap, body and wiring will be free of dirt, oil and cracks.

I. Fan Belts

- Proper adjustments of all belts are important and should be just tight enough to prevent slippage when the motor is suddenly accelerated. As a rule, the belt has proper tension if the inward movement is between 3/4" and 1". If this inward movement is less than 3/4" or over 1", adjust the belt. When the adjustment is too tight, the life of accessory bearings and belt is reduced appreciably. Belts will be free from checks, cracks, fraying, abrasions and grease or oil. Pay particular attention to the sides and bottom of the belt when making inspections. Some vehicles are equipped with serpentine type belts. Visually check the belt for cracks. Check the tensioner to be sure it is keeping the belt tight.

J. Final Drive

- Maintain fluids at prescribed level. (See Operator's manual). Clutch will be checked for proper operation and free travel.

K. Power Steering

- Maintain fluid at prescribed level. (See Operator's manual). Pump, hoses and reservoir shall be free of leaks.

L. Windshield Washer

- Maintain fluid at prescribed level. (See Operator's manual).

M. Fuel injector/ carburetor linkage

- Throttle controls and choke linkage will be in proper adjustment and operation of these parts shall show no perceptible wear. All gaskets will be in good condition. Fuel line connections shall be free from leaks.

N. Manifold heat control valve

- On units still operated within the fleet will be maintained in operative condition. This valve maintains the correct temperature to prevent valve warping during warm-up periods. A control valve that remains closed at normal operating temperatures will cause excessive temperatures and valve malfunctions. Air pre-heaters will be kept operational.

O. Fuel Pump

- Check the fuel pump for security of mounting and lines and fittings for leaks. Most fuel pumps have an external vent hole located on the pump body. If fuel is being pumped through this hole (engine running), replace the pump, as the diaphragm is defective.

P. Fuel Filters

- Generally located at bottom of fuel pump or in fuel line between fuel tank and the carburetor or throttle body. The filter should be free of dirt and water. Keep exterior clean and free of paint.

Q. Fuel-water separators

- Shall be free of leaks and securely mounted.

R. Fuel shut-off valve

- On tractor units, fuel shut-off valves must be operative and free of leaks. Under no conditions should an engine be shut off by use of the fuel shut-off valve.

S. Fuel Tank

-Fuel tanks should be kept full, not only for fire readiness but also to prevent accumulation of moisture and corrosion.

T. Hood

- Proper fit and locking of the hood will be maintained. The safety latch mounting bolts and nuts must be kept tight and the latch assembly properly lubricated.

2. OPERATING SYSTEMS

A. Brake Systems

- Wheel and brake master cylinder will be free from leaks. *Check fluid level in master cylinder every 1,500 mile and refill to proper level.* Clean top of master cylinder before removing cover. All brake lines, air and hydraulic, will be carefully inspected each month or any time brake problems are encountered. Brake lines will be free of kinks, cracks, dents, rust, worn places and leaks. Any problems with the brake system must be reported to the supervisor. Defects must be corrected before vehicle can be driven. Vehicles equipped with air brakes will have the air tanks drained of water daily. If the unit is equipped with automatic bleed-off valves, be sure they are working properly by pressing in on the valve.

a. Air Compressor - Check for security of mounting, air leaks, oil leaks and tightness of drive system.

b. Air Pressure Gauge and Alarms - Must always be kept operational, since these devices warn the operator of low air conditions in the main and auxiliary systems. Vacuum Booster Assembly shall be free of leaks, mounted securely and vacuum release port clean and free of obstruction. All lines and hoses will be free of kinks and fittings properly tightened.

B. Transmission

- Shall be free of leaks. Shifting device and linkage adjustment shall provide full engagement of transmission gears, work easily and be free from binding in all positions. Fluids shall be maintained at prescribed level and fluid and filters should be changed at manufacturer's prescribed intervals. Gearshift mechanism will be adjusted to eliminate hard shifting, jumping out of gear and excessive travel or play. All transmission mounting bolts must be kept tight.

C. Suspension

- Spring leaves shall be correctly positioned and unbroken. Wedges, clips, U-bolts and center bolt shall be in place and tight.

a. Shock absorbers will be maintained in such condition as to be able to reduce road shock to the vehicle. Mounting brackets are to be kept tight. Rubber inserts (grommets) will be in place and in such condition as to prevent excessive wear on shock mountings. Leaking shocks must be replaced.

D. Steering

- Maintain minimum steering wheel free play. End play in steering gear shaft and sector shaft is not acceptable; steering assembly should be free of binding in all positions of rotation.

a. Pitman arm will be tight on sector shaft. Steering gear lubricant shall cover gears in housing; housing will be free from leaks. Gear box, mask jack (steering column) and steering wheel will be assembled tightly and the entire assembly securely fastened to its mountings, including the dash mount and chassis mount.

b. Wheel stops shall be in place and adjusted to prevent wheel from rubbing against drag link, spring, stabilizer or chassis.

c. Front wheel alignment (caster, camber and toe-in) shall be within the limits specified by the manufacturer. Shimmy or wandering which occurs within the legal speed limits for a vehicle is unsafe. Such malfunctions must be corrected. Kingpin and bushings will be checked for excessive wear.

d. Tie Rod and Drag Links must conform to their original shapes. Adjustments of drag link ends and allowable wear of tie rod ends shall conform to manufacturer's standards. Wear or maladjustment of any of these parts, which might permit breakage or dislocation of components is unacceptable.

Any item listed above, with the exception of simple adjustment or tightening, that does not meet standards must be inspected and repaired by a certified front-end mechanic.

e. Wheel Bearings- shall be maintained and serviced as prescribed by the manufacturer. Some vehicles are equipped with oil-filled bearings; these should be monitored and serviced by proper technicians.

f. Steering Levers - Tractor steering levers and associated steering clutches and brakes must be adjusted to manufacturer's specifications. Adjustment procedures and clearances can be found in the Operator's Manual. Steering lever handgrips will be in place.

g. Joy Stick - Tractors equipped with joy stick steering will be adjusted only by qualified technicians.

3. VEHICLE EXTERIOR

A. Vehicle Body

- Will be kept clean and polished consistent with weather and fire hazard conditions. Truck beds will not have accumulation of trash.

B. Exterior paint

- will be cleaned and waxed at intervals frequent enough to prevent accumulations of oxidation and road film. Scratches or other damage that extend into or below the primer coat will be spot-painted with matching color.

C. Dents

-and other damage that is of such magnitude as to mar the overall appearance or safe operation of the vehicle shall be repaired commercially.

D. Bumpers, Brushguards and Canopy

- These parts and their supporting brackets, bolts, washers, nuts and other fastening devices will be intact and tight. Broken support brackets will be reinforced and welded promptly to eliminate further damage or impairment to the operation of the vehicle. Repairs will be painted immediately to prevent rusting.

E. Roll-Over Protective Structure (ROPS)

- All mounting bolts will be kept tight including the mounts on the limb risers or sweeps.

Attention: The protective structure is certified by the manufacturer and meets SAE roll-over standards. In order to keep this certification; no modifications to the structure (welding or drilling) can be made. The use of seat belts with the approved ROPS and screening is required. Seat belts are required on all tractors.

Tractors must be kept free of grease and debris accumulations, which constitute a fire hazard. Special attention will be given to the belly pan.

F. Decals

- Forestry Commission decals shall be placed on all assigned vehicles owned by the Commission. These will normally be centered on the left and right front doors. Decals must be smooth in appearance and free of excessive wrinkles and air bubbles. Torn or faded decals must be replaced. On tractors, decals will be placed on suitable surface, one on each side.

  Property numbers will be affixed to driver side door jams on wheeled vehicles and inside the canopy of tractors.

G. State License Plates

- State license plates will be firmly affixed to the vehicle in rear and clearly visible as required by law.

H. Lights and Reflectors

- Numbers, colors, location, types and function of lights and reflectors will conform to state motor vehicle laws. All broken or non-operative lights will be replaced.

ADDITIONAL LIGHTING REQUIREMENTS FOR TRANSPORTS

All transport trucks and truck-tractors shall be equipped with flashing red lights (strobe) and carry at least three reflector units.

I. Road Hazard Warning Device (Portable Reflectors)

As required by Alabama Law, all motor trucks must carry adequate road hazard warning devices of either the visual light or reflector type. These devices shall be clean, free of rust, and serviceable and contain three to the set. They must be carried inside the vehicle and in a metal rack or box attached to the vehicle. They will be used any time the vehicle is disabled on the traveled portion of any highway or shoulder thereof. They shall be displayed upon the roadway in the lane of traffic occupied by the disabled vehicle, one at a distance to the rear and one at the traffic side of the vehicle, approximately ten feet rearward or forward thereof.

Portable reflector units shall be constructed to include two (2) reflectors, one above the other, each of which shall be capable of reflecting all distances within 500 to 50 feet under normal atmospheric conditions at nighttime when directly in front of lawful upper beams of headlamps. In addition, reflector units will contain three (3) red flags that can be attached to the reflector support for daytime display.

Portable reflector units will be displayed during daytime or at nighttime at the locations prescribed above whenever a transport must unload on the shoulder of the road or upon the right-of-way.

J. Glass (including doors, windshield, etc.)

All glass will be the safety type. Glass is unsatisfactory for continued use and should be replaced when any one or more of the following conditions exist:

a. Cracks extending full length or width of one or both plies.

b. Chips or discoloration of an area of one inch in diameter and falling within the path of the driver's windshield wiper blade.

c. Chips or discoloration covering an area of three inches in diameter outside the path of the wiper blades, <u>if it impairs the normal field of vision.</u>

d. Loose or dislodged glass particles caused by cracks or breaks in the inside ply of any glass (windshield, door or rear window).

e. When an area of three inches in diameter within a 12-inch circle placed in the center of the door glass is damaged and thereby impairs normal vision.

f. Any condition where the driver's vision may be impaired.

Lift mechanism and channel anchorage and alignment will be maintained to permit free opening or closing the window using one hand on the crank.

K. Doors

- Alignment and locking devices will be maintained to provide easy and safe operation.

L. Outside Mirrors

- Mirror heads will be free of all cracks and discoloration. Head and arm adjustments must be tight enough to securely hold mirror in proper position. In addition, wide-angle mirrors will be adjusted to further reduce blind spots

M. Fuel Tank Cap

- Fuel tank will be equipped with a tight fitting fuel cap; seals or gaskets to be in serviceable condition. Vents will be free from restrictions. Be sure the right cap is being used;vented or non-vented. Check Operators Manual for correct type.

N. Wheels

- shall be free of cracks and warping; wheel studs and lug nuts tight. No wheel stud shall be missing. Axle stud nuts will be tight to prevent breaking axle assembly.

O. Tires

- Tires will be checked for visible evidence such as wear to the safety bars, proper inflation, carcass failure, rocks between duals, unusual tire wearing and missing valve caps. Tires on dual wheels, left and right, will be installed in matched diameter sizes only. For example, a new tire mounted next to a tire with lesser rubber will cause excessive wear to the new tire. If one size of tire is mounted to the right side and another size to the left, this situation can cause extensive damage (windup) to the gear train.

Spare Tire - Tire will be kept inflated to proper pressure. When carried, spare will be securely mounted to chassis or body.

P. Track Assembly

- Tension of track will be maintained according to instructions in Operator's Manual.

Rock Guards - Roller assembly area will be kept free of debris and excessive dirt.

a. Alignment - Tracks will be aligned to prevent excessive wear on the sides of drive sprockets, front idler and other assemblies.

b. Idlers - Inspect idlers for uneven wear of rims.

c. Frame Bolts - All nuts and bolts will be tight. Center, front and cross frames and housings will be securely fastened.

d. Track Shoes - Track shoe bolts will be tight. Grousers will be in such condition as to ensure proper traction.

Q. Exhaust

- The exhaust system shall be free of leaks and undue noise, mounting hanger and brackets tight and in place.

On tractors, exhaust system will be positioned to avoid discharge of excessive fumes in immediate vicinity of operator. Vertical exhaust-openings must be protected to prevent rain from entering the system.

R. Drive Line Assembly

- Shall be free of dents, twists or damage; welds should be free of cracks. Slip joints and splines shall be free of excessive wear and sticking. U-joints, bearings, hangers and shafts shall be aligned and positioned to prevent vibration and provide trouble-free operation at maximum allowable road speeds. Lockrings, clamps, blocks and bolts which fasten joints and bearings will be tight.

U-joints will be lubricated in accordance with operator's manual.

S. Differential

- Gaskets and seals shall be intact; inspection cover and pinion carrier assembly shall be tight and free of leaks. Lubricant will be maintained at prescribed level. Differential vent, located on the top of the housing, will be open and free of obstructions.

T. Transport Bed

- Floors or decks will be free of excessive accumulations of dirt, oil, trash and junk. Parts of the transport bed constructed of wood will be free of dry rot and excessive splits or cracks. All type beds used for carrying crawler tractors will be equipped with a forward chocking arrangement of sufficient size to warn the tractor operator of forward loading limits. It shall be properly positioned and secured. In addition, forward chocks must be high enough to prevent the tracks of the tractor from climbing over the chocks. Transport bed will also have a heavy guard installed in front to prevent tractors equipped with dozer blade or front mounted plow from striking the truck cab. Track guides of metal no less than three inches in height above the deck will be properly spaced and secured at the inside edges of the runners or tractor walkway.

Transport beds will be securely fastened to the truck frames. Heavy duty U-bolts and welded plates are best. All metal will be free of rust and preserved with semi-gloss black paint.

a. Hinged Type Skids - Loading skids will have cross members tightly secured in place, boss pins will be of proper size to prevent bending and excessive skid movement and will have a locking pin arrangement securely in place on either end. If hinged loading skids will not lie flat when in transit position, a chain will secure them.

b. Pull-Out Skids - Pull out or sliding skids must slide in and out of the carrier without a great deal of effort. The carrier rolling bars will be free to turn. The skid safety pin must be in place whenever the skids are in the transport position. Safety blocks must prevent the skid from leaving the carrier and falling to the ground.

c. Support Standards - On all type bodies, support standards will be installed and maintained to prevent the truck from becoming over balanced during loading and unloading operations. Locking assemblies must retain standards in the travel position when not in use.

d. Plow Foot Support - The plow foot will rest on a support of wood or metal when the tractor-plow is in the loaded position and the plow is down. This support must be secured to the transport bed or ramp and must prevent the coulter blade from coming into contact with the bed or ramp.

e. Roll-Back and Tilt-Back Beds - Hydraulic fluid will be kept at proper level at all times to prevent damage to pump and to ensure maximum safe lifting, holding and travel.

Safety levers must completely engage forward locks.

All areas will be lubricated as required by operator and maintenance manual.

All roll-back and tilt back controls will be kept in proper working order.

Cables on winches will be inspected for fraying, kinks and loose clamps.

f. Walkways - Walkways will be painted with a non-slip coating to prevent slips and falls on steel platform surfaces. The area to be coated is normally outside the tractor runways and about eighteen inches wide, extending from front to rear of bed. The non-slip coating is also recommended on steel running boards or steps.

4. VEHICLE INTERIOR

A. Cleanliness

- Vehicle interiors will be kept clean. Floors and door wells will be swept clean of dirt and debris. Interior surfaces will be wiped free of dust.

B. Interior glass

- Will be cleaned frequently.

C. Interior surfaces and dashboard,

- Painted surfaces will be cleaned frequently and waxed occasionally. Rust spots, which usually appear on gear shift levers, hand brake levers and window sills will receive immediate attention. Dashboard will not be used to store papers or other items.

D. Seats and Floor Mats

- Seat cushion and back will be in place, smooth, free from tears and broken or misaligned springs; seat frame or mounting will be secured to cab. The seat locking device will hold on both sides in any position of adjustment. Other seat cushions and devices will be in good repair and

presentable in appearance. These standards also apply to tractor seats. Materials such as tools, clothing and papers will be neatly arranged and securely stored. Loose items lying on seats or floors are safety hazards and will not be tolerated. The use of paper containers and tool boxes will facilitate safe storage. ***Clips will not be used to hold papers to the sun visor.***

5. OPERATION

A. Gasoline

engines should start with a reasonable amount of cranking effort. Operation of engine should be such as to allow the maximum amount of efficiency. Knocking or excessive valve noise, misfiring of spark plugs, incorrect timing, poor carburation or acceleration, improper idling, excessive heating, etc. does not constitute an efficiently operating engine. Check operator's manual for special starting procedures.

B. Diesel

engines operate by compression ignition. Compared to gas engines with electrical spark ignition, the diesel will be quite noisy when cranking cold. The diesel engine should start smoothly and run without excessive smoke and erratic RPMs.

a. Diesel-Turbo Engine Shut-Off - *Caution*: Never shut off the diesel engine without first letting the engine cool down for a **60 second**, low idle period and **3 minutes on turbo-charged units.**

C. General Operation

-Ignition switch must be operative and tight in its mounting. Key must turn freely. All dash and interior lights will be operative. All instruments, including gas gauge, temperature gauge, tachometer, hour meter, ammeter, oil pressure gauge, speedometer, will be in operating condition. Warning lights will be maintained.

a. Horn buttons shall be mounted on steering wheel (air horns excluded). All vehicles will be equipped with an electric horn in addition to any air horns. The horn shall provide a sound that is audible for 200 feet.
Back-up alarms will be operational and audible at least 50 ft. from vehicle.

b. Windshield Wipers - Windshield wipers, including motors, linkage, arms, blades and controls shall be securely fastened to their mountings and properly adjusted. Particular attention should be given to blade condition to prevent scratching of windshield. Wiper blades will be replaced when they become deteriorated.

c. Rear View Mirror - Interior rear view mirrors shall be clean, free of cracks and discoloration, securely mounted and properly adjusted.

d. Foot Brake - Brakes shall be capable of stopping all vehicles in a safe distance. Brake lining wear should be inspected often enough to prevent scoring of rotors and drums. Riveted lining worn in excess of forty percent of its original thickness and

bonded lining worn in excess of seventy percent should be replaced. *Foot brakes will be thoroughly inspected and/or serviced at least once annually*.

e. Parking Brake Assembly. All parking brakes shall be capable of holding the vehicle, unloaded or loaded, with gears in neutral position. Drum will be tight on flanges and linings serviceable. Linkage or control cables will be free from binding and wear, properly adjusted and lubricated. Brake must be fully effective when the brake pedal/handle has completed not more than 2/3 of its allowable travel. Radios and other equipment will not be mounted in such a way as to prevent the full travel of hand brakes.

f. Air and Electric Parking Brake - All the component assemblies of the air and electric parking brake must be maintained. This includes the "Parking Brake On" indicator.

Wheel chocks will be used on all transports regardless of the type of parking brake system installed on the unit. Chocks must be of sufficient size to prevent the wheels from moving.

g. Clutch - (If equipped) Pedal free play will be at least 3/4 inch and shall not exceed 1 1/4 inch. Refer to operator's manual or commercial repair shops for pedal clearance adjustment on firewall mounted and hydraulically operated types. Clutch will be free from grabbing or chattering. Refer to Operator's Manual for all vehicles equipped with air or special brake systems.

Rubber pedal pads provided by the manufacturer will be in place and not excessively worn.

h. Air-Shift and Two-Speed Axle Control - (if equipped) shall be securely mounted. Selector shall operate freely and properly.

i. Heater and Defroster - Heaters will be free of leaks. Defroster mechanisms and hoses must be operative. Defroster vents must be free of trash, pencils, etc.

j. Other Accessories - All other accessories including power steering, power brakes, air conditioning and their related systems will be properly serviced and maintained in operating condition as outlined in Owner's/Operator's Manual.

On tractors, plow lift and blade actuating mechanisms must be operative through the full travel range. Mechanism must be capable of holding plow or blade in position without loss of operating pressure.

6. PLOW

A. Cleanliness

- The plow will be free of excessive mud and dirt

accumulations consistent with weather conditions and the fire hazard level. In no case will entangled wire or pieces of wood wedged between parts be allowed to remain.

NOTE: Alabama Property Numbers must be clearly identifiable. Plow points, coulters and discs will not be painted but must be given a light coat of oil or grease to prevent rusting when long periods of non-use are anticipated.

Caution: Take time to remove dirt, rocks and other debris from the tractor undercarriage, plow and bed before transporting. Each year claims must be paid for the repairing of privately owned vehicles because someone failed to heed this precaution.

B. Condition of:

(1) Hitch Assembly - The hitch assembly will be operative and not excessively worn. All welded seams will be checked frequently for cracks. All pins, bushings, spacers and cotter keys will be in place and not excessively worn. All moving or swiveling parts must have full freedom of travel and be properly lubricated. All nuts and bolts will be checked periodically for tightness.

(2) Transport Locking Assembly - The transport locking assembly will be used when practical to relieve unnecessary strain on the hydraulic system and for safety purposes.

NOTE: When the plow is in the full "up" position, the stabilizer must seat fully against the equalizer bracket. The transport wedge or dogs must engage the stabilizer.

C. Hydraulic Cylinders

- Hydraulic cylinders will be free of leaks. They will be kept clean so leaks can be readily detected. Tie rods and nuts will be in place and tight. Clevis shaft, fork and clevis pin will not be worn excessively. Clevis pin clips will be in place. If cylinder is equipped with adjustable depth control, this adjustment must permit full travel of the plow within the desired range. Valves and fittings must be secure and free of leaks.

D. Hydraulic Hoses

- Hydraulic hoses will be free of leaks and excessive fraying. All clamps and fittings will be in place and tight. Hoses will be positioned in such a way as to be free of moving parts, sharp bends and chafing. When hoses deteriorate to a point where impending failure is indicated, they should be replaced without delay.

E. Spring

- Most rear-mounted plows are equipped with tension springs. These springs, the spring rod and associated security arrangements must be tight and in good operating condition.

F. Coulter Supports

- Coulter supports will be fastened securely to the plow frame and adjusted to allow proper clearance and alignment of the coulter blade and plow point. Bolt holes will not be worn or elongated.

G. Coulter Bearing Assembly

- Coulter bearing will be free of excessive wear, properly adjusted and lubricated. Grease seals will be intact and serviceable. Grease fitting must be usable and clean. Threads on coulter axle must be usable and axle nut tight. Check housing for cracks. The coulter blade will be reasonably free of dents and gaps and not worn excessively. All coulter mounting bolts will be in place and tight.

H. Middlebuster

- Middlebuster will be securely mounted to the frame by proper size plow bolts. The point and edges should be kept in proper operating condition.

I. Disc Blades

- Disc blades will be reasonably free of gaps and dents. All retaining bolts will be of the proper type, in place and tight.

J. Disc Bearings

- Disc bearings and assembly will be properly adjusted and not worn excessively. Disc spindle will be properly aligned; thrust washer, nut and cotter key in place. Bearings will be properly lubricated and grease fittings in place and clean. Dust caps will be in place and serviceable if applicable.

K. Spreader

- Spreader and spreader wings will be properly aligned and securely attached.

L. Slide

- Slide located beneath and behind the middlebuster will be flat, properly adjusted as to plowing depth and not excessively worn. The adjustable-screw type mechanism will be operative.

M. Paint

- The plow will be painted yellow in color when repainting is necessary. Paint will be in good condition to prevent rusting.

N. Lubrication

- Bearing surfaces must be properly lubricated at all times with medium consistency pressure grease. Frequency of lubrication will depend on amount and type of use. Discs and coulters will be turned to ensure proper bearing lubrication when tractor is exercised during long periods of non-use. Care must be taken to avoid sealing grease fittings when repainting of equipment is accomplished.

ON BOARD VEHICLE EQUIPMENT REVIEW

All Vehicles

- first aid kit
- flashlight
- set spare fuses (all amps)
- simple set mechanic's tools (screwdriver, pliers, hammer, adjustable /fixed-size wrenches)
- standard tire gauge
- fire extinguisher
- jack and lug wrench
- current FC-25 and FC-26 forms
- owner's / operator's manual
- Equipment Maintenance Manual
- Risk Management accident forms
- State road map
- spare tire (mounted)

Pickup or assigned vehicle (fire)

- axe
- cutter rake
- jumper cables
- shovel
- compass
- county maps (assigned and adjacent counties)
- fire shelter and PPE (for each assigned worker)

Transports

- axe or chain saw
- two cutter rakes
- two swatters
- shovel (LHRP)
- compass
- county maps (assigned and adjacent counties)
- road hazard warning device (portable reflector set)
- fire shelter and PPE (for each assigned worker)
- log chain (minimum 20')
- set of Wheel chocks
- spare backfiring fuel, water, and hydraulic fluid
- current FC-25 and FC-27 forms for tractor

Tractor

- axe
- shovel (SHRP or entrenching tool)
- cutter rake
- wire cutters

- small roll of wire (l0'-20')
- backfire torch (mounted)
- fire shelter
- spare hydraulic fittings
- grease gun
- mechanic' s tools

A. Storage - All firefighting tools and other equipment will be stored in a safe, neat and logical manner. Cutting edges will be stored or protected in such a way as to prevent accidental injury when removing from vehicle. All equipment must be secured in such a manner as to prevent it falling from the vehicle during transit. No glass containers are to be hauled on the vehicle or in tool boxes unless they are packed inside a protective housing to prevent breakage.

B. Tools, Mechanics - A simple set of mechanics' tools will be carried in each fire-fighting vehicle. As a minimum, this set will include a screwdriver, pliers, hammer and adjustable or fixed-size wrenches. Tools will be clean, serviceable and properly stored.

C. Tool Boxes - All truck-type vehicles should be equipped with standard tool boxes. All tool boxes shall be in good repair and adequately protected by paint. They shall be designed for safe placing and removing of tools. Drop lids shall be free from rough or broken edges of sheet metal. All hinges and hasps will be operative. Boxes will be properly secured to truck bed.

D. Backfiring Torch - The tank portion of the torch will be free of leaks and large dents. All gaskets, plugs and valves will be serviceable and operative. When not in use, "Sealtite" -type torches will be stored with spout inside tank and discharge sealing plug and gasket in place. Operators should avoid overfilling with fuel and allow room for expansion. If torch is carried on a tractor, it will be secured in the commercial-type-carrying bracket. In all cases, it must be stored as to be secure in transit.

E. Spare Hydraulic fluid Backfiring Fuel and Water - Transports which carry equipment (vehicular or otherwise) as a component part of their load that use backfiring fuel, or hydraulic fluid will carry extra quantities of that fluid. Containers will be painted according to the following color code:

Black - Backfiring Fuel
Blue - Water
Green - Hydraulic

All containers will be clearly labeled as to contents in letters no less than 3/4 inch in height painted on the side of the container. All letters must be neat and legible. Containers must be reasonably free of dents, must not leak and must have tight-sealing caps. Containers must be stored so as to be secure in transit.
Undiluted gasoline will never be used as a substitute for backfiring fuel. Only clean oil will be used in mixing backfiring fuel. Backfiring fuel shall consist of one quart of motor oil, three gallons of kerosene and two gallons of gasoline. Diesel fuel mixture will

consist of three gallons of diesel fuel to two gallons of gasoline to make a five-gallon mixture.

G. Water Pumping Units - All units equipped with water pumping capabilities shall maintain pumps and tanks in good working condition. Gasoline powered pumps will be maintained to insure a quick and reliable start. Electric powered pumps should have wiring inspections monthly. Cracked or chaffed wiring must be replaced to prevent battery discharge or possible shorts that may cause a vehicle fire. Extra care during cold weather is essential. Pumps will be drained in freezing weather. In sustained cold weather the tank should also be drained to prevent damage from freezing temperatures.

H. Chain and Binders - All tractors must be securely chained and bound. Chains will be 3/8" proof tested chain and have sufficient length to adequately secure the tractor to the vehicle. Tractors will be secured in such a manner as to prevent excessive movement during emergency situations.

I. Road Hazard Warning Device - As required by Alabama Law, all motor trucks must carry adequate road hazard warning devices of either the visual light or reflector type. These devices shall be clean, free of rust, serviceable and contain three to the set. They must be carried inside the vehicle and in a metal rack or box attached to the vehicle. They will be used any time the vehicle is disabled on the traveled portion of any highway or shoulder thereof outside of any municipality. They shall be displayed upon the roadway in the lane of traffic occupied by the disabled vehicle, one at a distance to the rear and one at the traffic side of the vehicle, approximately ten feet rearward or forward thereof.

J. Jack - A mechanical or hydraulically operated jack of adequate size and in operating condition must be carried on each vehicle.

K. Lug Wrench - A serviceable lug wrench must be carried.

L. Spare Fuses - Spare fuses (of all appropriate sizes and amperages) for vehicle and tractor lighting and starting systems will be carried in the vehicle or on the tractor at all times.

M. First Aid Kit - A mountable-type, waterproof first aid kit will be carried in all vehicles, including crawler tractors.
NOTE: All supplies will be free of contamination and will be considered expended if the individual bandage wrapping or tube seal is broken unless tube has replaceable cap. (Contents stored in waterproof plastic bags have longer usable life). The container portion of the kit will be kept clean, free of rust and painted. The rubber seal will be free of paint and intact. Repainted kits must be clearly labeled with the words "FIRST AID". Latches will be operative. All kits will be mounted in the unit's interior in such a way as to be immediately detachable and available.

N. Safety Hat - Safety headgear will be available for each employee assigned to the vehicle.

T. Gloves - Each vehicle operator will have a pair of work gloves available.

O. County Map - Each associate will have a county map of his assigned county, and adjacent counties, available in their assigned vehicle.

P. Current FC-25 - A current Form FC-25, Equipment Record will be kept in the vehicle for daily use. If the vehicle is used to carry a tractor, a Form FC-25 for the tractor will also be available.

Q. Current FC-26 - A record of the last inspection performed on the vehicle. If the vehicle is used to transport a tractor, **Form FC-27** covering the last inspection of the tractor will also be available.

R. Accident Procedure Information - A copy from the Department of Risk Management will be carried in every vehicle.

S. Fire Extinguisher - A 5-6 lb. dry powder ABC type extinguisher is required on all vehicles. Condition of pressure, safety latch and mounting will be checked. Extinguishers will be visually inspected weekly. Defective or discharged units will be recharged immediately.

T. Operators Manual - will be kept with vehicle at all times.

OPERATOR'S WEEKLY CHECK LISTS FOR MOTOR VEHICLES

1. Radiator water level, hoses and fan belt
2. Crankcase oil level; make visual check of engine and accessories for leaks and breakage
3. ALL lights, including turn signals and four-way flasher
4. Make visual check of tires and wheels
5. Windshield and door glass for crack, breaks and cleanliness
6. Windshield wiper operation
7. Horn
8. Service and parking brakes
9. Rear-view mirror inside and out
10. Steering wheel-- see that it operates freely, does not bind
11. Instrument panel, including temperature gauge, oil pressure indicator, ammeter, air pressure (if so equipped)

1. **BEFORE MOVING VEHICLES** check around vehicle to make sure no hazards exist.
2. **When unloading or loading tractors on or off transports, make sure:**
   (a) truck will be as level as possible
   (b) engine of truck will be shut off
   (c) ramps and rear support legs are in the proper position
   (d) both doors on the transport will be closed
   (e) parking brake on the transport will be set
   (f) wheel chocks are in place

OPERATOR'S TRACTOR CHECK LIST

****WEEKLY OR EVERY 10 HOURS OF OPERATION*

Before Starting Engine Check:

1. Crankcase oil level
2. Radiator coolant level, radiator grill and clean if necessary. Do not start engine until radiator is full.
3. Drain water from fuel tank.
4. Fuel supply--Fill at end of day, if possible.
5. Air cleaner
6. Fan belt adjustment--1/2" to 3/4" sag
7. Track adjustment--3/4" to 1" sag between two top rollers
8. Master and steering clutches--adjustments
9. Check final drives and transmission oil level

After Starting Engine Check:

1. Oil pressure immediately --Do not operate if pressure is not in operating range.
2. For oil and fuel leaks
3. Electrical system, including alternator output

After Engine is warmed Up Check:

1. Heat indicator--Do not operate if indicator is in danger zone.
2. Oil pressure indicator

******MONTHLY OR 40 HOURS 0F OPERATION CHECK:***

1. Air cleaner screen and intake pipe--An engine that cannot breathe properly cannot run satisfactorily.
2. All belts--See that they are adjusted properly.

SECURING OF TRACTORS TO TRANSPORT

All tractors will be bound in at least two locations. At least one point on each side of tractor will be used. All the newer tractors were ordered with two binding points on each side of the tractor. On these units all four points will be used to bind the tractor to the transport bed. The front and rear on each side should be bound in opposite directions minimizing any movement. On two point systems the binding should be at a 90-degree angle to the tractor. Under no circumstances will a chain be used over the plow as a binding point. This can cause damage to the plow and in the event of an accident will not hold the tractor to the bed. The tractor should be centered on the transport bed and balanced front to back to provide as stable a footing as possible.