Bureau of Land Management

FIRE VEHICLE

DRIVER ORIENTATION

BL-300

Student Workbook

February 2014

FIRE VEHICLE DRIVER ORIENTATION

COURSE OBJECTIVES

Upon conclusion of this course, students will be able to:

- Understand BLM policies and regulations related to driving a government vehicle.
- Perform a driver walk-around inspection and engine start-up.
- Perform a vehicle pre-trip inspection.
- Describe and demonstrate the S.T.O.P. procedure.
- Correctly start and move a parked vehicle to another location.
- On an established course, demonstrate vehicle handling and maneuvering capabilities, including but not limited to, backing, positioning, parking, and braking.
- Demonstrate how to properly use spotters.
- Describe and demonstrate effective spotting techniques.

INTRODUCTION

Driving is one of the most hazardous tasks Bureau of Land Management (BLM) personnel perform. Vehicle-related accidents are often one of the leading causes of firefighter deaths annually, resulting in significant expenditures from damage to property and equipment, associated medical treatment costs, and lost productivity. While not all accidents can be avoided, knowledge of how to safely operate and work around vehicles can significantly reduce the exposure to accidents and near misses.

The intent of the Fire Vehicle Driver Orientation (BL-300) course is to provide all BLM fire personnel with the foundational knowledge to make sound decisions and maintain situational awareness while operating and working around fire vehicles so that everyone comes home safely.

Interagency Standards for Fire and Fire Aviation Operations policy requires that "All employees driving motor vehicles are responsible for the proper care, operation, maintenance, and protection of the vehicle, and to obey all federal and state laws." Successful completion of BL-300 is a BLM driver's first step towards safely and responsibly operating fire-related suppression and support vehicles.

All students must have a current state driver's license and/or a Commercial Driver's License (CDL) Instruction Permit in their possession commensurate with the vehicle requirements they will be operating. All driving requiring a CDL will be performed in accordance with applicable Department of Transportation regulations. BLM drivers may operate vehicles requiring a CDL endorsement provided they possess a CDL instruction permit **and** a CDL-qualified passenger rides in the cab.

BUREAU POLICIES

Drug-free Workplace

No one who is mentally or physically impaired (overly tired, on medication, intoxicated, etc.) will be permitted to drive an engine or other vehicle.

Vehicle Operation

Drivers and all passengers must be properly seated in an enclosed cab and belted in with an approved seat belt when traveling on highways or off road.

Posted speed limits will not be exceeded. Lower speeds may be necessary during poor weather conditions or changing environmental conditions.

All drivers must have a current state driver's license in their possession for the appropriate vehicle class before operating the vehicle.

- A commercial driver's license (CDL) instruction permit is available by taking the appropriate tests for the type of vehicle the driver will operate.
  - An instruction permit is valid for up to 180 days.
  - A driver with a CDL instruction permit must be accompanied at all times by a person who has a valid CDL license.

- A CDL with appropriate endorsements is required when:
  - The vehicle GVWR is 26,000 lbs or more.
  - Towing a vehicle 10,000 lbs GVWR or more.
  - Hauling hazardous material requiring the vehicle to be placarded.

THE S.T.O.P. PROCEDURE—PREPARATION FOR MOVING A GOVERNMENT VEHICLE

All drivers of fire vehicles will use the S.T.O.P. procedure prior to operating a vehicle. The vehicle will not be moved until all four items in the S.T.O.P. procedure are addressed.

"S" – Seat belts on?

- Seat belts must be available and used in Bureau motor vehicles. Without exception, seat belts must be worn at all times by drivers and passengers, regardless of the distance to be traveled or the time involved.
- The driver is responsible for asking passengers if they are wearing their seat belts and ensuring that they are worn at all times.

"T" – Tools and equipment stowed?

- Ensure all tools and equipment is secured in cabinets or approved storage areas before moving the vehicle.

"O" – Operator (driver) and crew have situational awareness?

- Determine if the vehicle is clear of hazards.
- Never back up without checking behind the vehicle.
- Utilize spotters (vehicle occupants) whenever possible.

"P" – Personnel accounted for?

- Ensure all personnel are accounted for and their locations are known.
- Communicate your intentions to all personnel before moving the vehicle.

DRIVER WALK-AROUND

The driver walk-around will be done every time the vehicle is moved. This allows the driver to complete a 360-degree visual inspection of the vehicle.

The walk-around begins as you approach the vehicle then continues in a clockwise or counter clockwise fashion.

Things to look for before to moving the vehicle include:

- Rocks in the way of tires
- Debris or rocks stuck in duals or elsewhere
- Holes, berms, ditches, etc.
- Large stumps or downed trees
- Chock blocks secured and in place
- Gear or equipment around or under the vehicle
- Vehicles parked near the vehicle
- Personnel relaxing or sleeping around vehicle
- Body damage that occurred while away from the vehicle
- Cabinet doors closed
- Side and overhead clearance in and near the path your vehicle will travel

PRE-TRIP INSPECTION/PREVENTATIVE MAINTENANCE CHECK

A fire vehicle pre-trip inspection is done to help the operator and crew personnel find problems that could cause a crash or breakdown. This inspection should <u>not</u> be confused with the driver walk-around which is done every time the driver moves a vehicle.

- The pre-trip inspection should be performed daily, generally at the beginning of each shift, even if the vehicle is not moved.
- All BLM fire vehicles inspections will be documented in the *Fire Equipment Maintenance Procedure and Record* (FEMPR) or equivalent.

WORKING NEAR A MOVING VEHICLE

When working in close proximity to a moving vehicle, there is an increased risk for an accident to occur.

Vehicle Danger Zones

Because of the design and size of our equipment and the environment we work in, there are operator danger zones (blind spots). This visual aid was developed to help in identifying these areas.

Green Zones

The green zones are located directly left and right of the vehicle.

- Whenever possible, operate in the green zone.
- The green zones usually allow for visual contact with the operator.

Yellow Zones

Yellow zones are limited visibility and mirror use areas.

- Notify the driver when you are in these areas.

Red Zones

The red zones are located directly in front and behind the fire vehicle.

- Never work in the red areas while the vehicle is moving.
- Notify the driver prior to entering red zones.
- Stay out of the red zone where the driver has no visual.
- The red area in front of the vehicle extends 10 feet out from the front bumper.
- You must have visual contact with the driver when working in front of the vehicle beyond the 10-foot range.

Using Spotters

Always use a spotter to compensate for danger zones (blind spots) located in the driver's field of vision. If alone and no help is available, drivers should get out of the vehicle and do a visual check themselves.

When to Use a Spotter

Spotters should be used when:

- Backing up
- Performing off-road operations
- Hazardous conditions exist
- Low vehicle clearances exist
- Narrow/confined driving spaces exist

Spotter Techniques

- The spotter should have a clear line of sight to the driver. The spotter's position should be located as follows:
  - Forward movement: Outside the forward red zone on the driver side windshield
  - Backing movement: Outside the rear red zone on the driver side mirror
- The spotter and driver should understand a common set of hand signals.

- The spotter and driver need to communicate on the planned action.
  - Where are we going to park?
  - How far off the shoulder do we want to be?
  - What areas are we going to be traveling through?
- Spotter distance from the vehicle will depend on various situations at the time of the maneuver; however, visual contact between the spotter and driver shall not be compromised.
- If the driver loses sight of the spotter, the driver should stop immediately and determine the spotter's location.

SITUATIONAL AWARENESS (SA)

Situational awareness (SA) when operating a vehicle is the driver's perception of what is happening or has happened around him/her. Lack of good situational awareness is the leading cause of vehicle-related accidents.

Crew Safety

- Know the location of your crewmembers and other personnel at all times.
- Never move a vehicle without ensuring all personnel are clear of the area.
- Communicate with personnel on vehicle maneuvers before moving.
- Honk your horn before moving the vehicle.
- Understand the vehicle danger zones.

Safety Equipment

Make sure safety equipment is being used correctly.

- Never move a vehicle until all passengers have their seat belts fastened.
- Adjust the driver's seat.
- Adjust mirrors.
- Make sure the back-up alarm, if equipped, is working.

Pay Attention to the Surroundings

Immediate Surroundings

- Road conditions and type
- Road shoulders
- Clearances
- Ground cover and type

General Surroundings

- Rock piles/rock outcroppings
- Ravines/cliffs
- Damaged roads and/or bridges

Vehicle Placement at the Fireline

Ingress and Egress

- Never drive a fire vehicle into a place where egress is difficult.
- Parked vehicles need to face towards an exit (escape route).
- Do not block traffic or other fire vehicles.
- Leave keys in unattended fire vehicles during fire operations.
- Roll up windows.
- When possible, park in the black.
  - Watch for hot spots under tires.
  - Watch for venting fuel from vehicle fuel tanks.

Fireline Hazards

Be aware of fireline hazards (snags, rolling debris, etc.) when parking the vehicle.

Parking on a Hill

- Turn the wheels uphill or into the inside/embankment.
- Firmly set the emergency brake or parking brake.
- Put shifter in "Park" (if automatic transmission) or in a forward gear (if manual transmission); do not leave the transmission in neutral.
- Turn off the engine.
- Chock the wheels.
  - When utilizing chocks, make sure chocks are on the correct side in reference to the slope.
  - Place chock snug against the tire (no large gaps between the tire and chock).
  - Assure the chocks are approved to hold the weight of the engine and will grip the road surface.

STARTING THE VEHICLE

Operating BLM fire vehicles is more complicated than operating most passenger vehicles because of their complicated diesel engines and integrated fire package systems. Additionally, various components, gauges, and switches must be addressed before starting the engine.

Battery ON/OFF Switch

Most BLM fire vehicles have a battery ON/OFF switch located inside the driver side door next to the driver's seat.

- Depending on the specific model of your vehicle, this switch needs to be in the "ON" position for the vehicle to start.
- When leaving the vehicle unattended, turn the battery ON/OFF switch to the "OFF" position to avoid battery drain.

Driver Adjustments

- Adjust the driver's seat.
- Adjust mirrors for proper alignment and maximum view.

Power Control Console

Some fire vehicles have a power control console that contains the power switches to operate the following features:

- Emergency Lighting Switches – Activate the emergency lights.
- Body Master Switch (if equipped) – Provides power to the fire package.
- Pump Master Switch – Provides power to the pump.
- Radio Master Switch (if equipped) – Provides power to the radio.

Automatic Transmissions

Vehicles equipped with an automatic transmission must be in the "Park" ("P") position or "Neutral" ("N") position to start (varies by transmission manufacturer/model).

Manual Transmissions

The clutch must be depressed to start vehicles equipped with manual transmissions.

Ignition

Start the engine by turning the ignition key.

- Allow glow plugs to warm up.
- Ensure water and glow plug indicator lights go off.

Alarms and Buzzers

- All alarms and buzzers should sound or come on.
- Wait for alarms and buzzers to go off before releasing the parking brake.

Gauges

All gauges should display within normal operating ranges.

Parking Brake

Release the parking brake.

Air Brake System (if equipped)

Drivers will need to release the parking break by firmly pushing in the parking brake control.

- This diamond-shaped, yellow, push-pull control knob is typically located on the vehicle dashboard or within the driver's reach.

Parking Brake System

Drivers will need to release the parking break by firmly pushing in or pulling out the parking brake control.

- This may be a foot pedal or in-dash lever.

Diesel Particulate Filter (DPF) Operations

How the DPF Works

The DPF works by physically trapping and removing particulate matter from the engine's exhaust to reduce particulate matter emissions. The soot that accumulates in the filter must be periodically reduced to ash to prevent excessive exhaust restriction. The soot reduction process, also known as "filter regeneration," is generally performed automatically by the engine and after-treatment system.

Filter Regeneration

- Passive regeneration occurs when exhaust gas temperatures are high enough to initiate combustion of the accumulated particulate matter in the DPF, without added fuel, heat or driver action. The driver may see a light in the information center typically yellow or green and solid.

- Active regeneration may require driver action and/or other sources of fuel or heat to raise the DPF temperature sufficiently to combust accumulated particulate matter.

Be aware that filter regeneration may occur during inopportune times. Vehicle operators are responsible for familiarizing themselves with the vehicle owner's manual to help mitigate the potential for unanticipated regeneration.

STEERING WHEEL HAND POSITIONS AND TURNING TECHNIQUE

Maintain the proper hand positions and proper turning techniques for all driving conditions.

- Place hands at the 9- and 3-o'clock positions on the steering wheel.
- Place thumbs on the outside of the wheel.
  - This helps to avoid injury in the event the steering wheel reacts to the front tires hitting an object such as a rock.
- Use the shuffle hand technique when turning.

SHIFTING MANUAL TRANSMISSIONS (4- OR 5-SPEED)

Putting the Vehicle in Motion

1. Depress the clutch.
2. Select the proper gear.
   - Second gear (generally) when starting on level ground.
   - First gear when starting on steep slopes.
3. Let the clutch out slowly as you slowly depress accelerator.

Up Shifting

1. Bring the tachometer to between 2,500 and 3,000 RPM.
2. Depress the clutch.
3. Shift to a higher gear.
4. Let the clutch out slowly as you slowly depress accelerator.

Down Shifting

1. Bring the tachometer to 1,500 RPM (avoid lugging the engine).
2. Depress the clutch.
3. Shift to a lower gear.
4. Let the clutch out slowly as you slowly depress accelerator.

Putting the Vehicle in Motion on a Hill or Slope

1. Set the parking brake.
2. Put right foot on brake; left foot on clutch.
3. Shift into first gear.
4. Let clutch out slowly as you slowly depress accelerator.
5. Feel a pull forward; then release the parking brake.
6. Maintain RPM through the climb.

AUTOMATIC TRANSMISSIONS

Starting the Engine

1. Start the engine in park.
2. Put right foot on the brake pedal.
3. Turn the ignition key to start the engine.

Select the Proper Gear for Travel

- Select the proper gear for travel.

Putting the Vehicle in Motion

- Release the brake pedal, and drive in proper gear.
- If the transmission shifts constantly, go to a lower gear selection.

AIR BRAKE USE

Normal Stops

- Apply the brakes firmly at first and gradually release as speed is reduced.
- Do not "fan" the brakes.
  - "Fan" refers to the repeated rapid application and releasing of the air brakes during a stop.
  - Avoid this action since it results in poor brake performance lowering the reservoir and air line pressures.

Downhill Runs

- Use the proper gear reduction to maintain the vehicle at a safe speed.
- Brake application can be made intermittently to keep the vehicle well under control.

General Braking and Stopping Issues

- Allow for extra stopping distance when driving a vehicle with extra passengers or a heavy load.
- Be aware that water in the tank can slosh around even in a baffled tank.
- There is potential for more skidding when braking on gravel roads than on paved roads.
- Apply gentle but firm pressure on the brake pedal.
  - Do not lock up the wheels (dynamite braking).

TERRAIN CONCERNS IN OFF-ROAD VEHICLE DRIVING

Mud and Sand Areas

- Make sure the 4-wheel drive hub and transfer case are engaged before entering the area.
- Maintain momentum.
- Keep front tires straight.
- Maintain a smooth, steady speed.

Side Hills

- Be aware of load shifting (weight transfer).
  - Full versus partial tank of water
- Be aware of how load structuring affects your center of gravity.
  - Coolers
  - Packs
  - Hose
- Be aware of soil types the vehicle is traveling over and their effects on sliding or rollovers
  - Loose and sandy
  - Hard pan
  - Rocky or gravelly

Hills

- Select the proper gear before climbing a hill.
  - Do not force shifting while on a hill; this action could result in missing a gear or stalling.
- Down shift on the crest of a hill before descending.
  - This prevents free-wheeling and missing a gear.

Road Shoulders or Dozer Berms

When going over or coming out of road shoulders or dozer berms, address the following:

- Vehicle's center of gravity
- Break-over angles

Water Fording

- Unless stated otherwise in the Original Equipment Manufacturer's (OEM) documentation, the maximum water depth to cross should not exceed the center-point or hub of the vehicle's wheel.
- Remember to scout out water crossings, checking the water depth and stream bed condition prior to making the crossing.

OUTSIDE EXERCISES

The outside exercises consist of several driving stations which provide students the opportunity to practice the principles learned during classroom instruction in a controlled environment.

During the outside exercises, students will:

- Perform a driver walk-around.
- Demonstrate driver situational awareness.
- Demonstrate the S.T.O.P. procedure.
- Perform an engine start-up.
- Drive a vehicle in an urban setting.
- Drive the vehicle in an off-road environment.
- Use spotters when appropriate.
- Be evaluated by an instructor.

Additional instruction and driving time may be needed throughout the season to complement development processes.

CONCLUSION

Final Thoughts

- Never move a vehicle without ensuring that personnel are clear!
  - Use spotters where appropriate.
  - Honk the horn prior to moving a vehicle.
  - Buckle up!

- Describe and demonstrate effective spotting techniques.

Bureau of Land Management
Fire Vehicle Driver Orientation (BL-300)

Driver must have a valid state driver's license in their possession for appropriate vehicle class before operating the vehicle.

Student	Evaluator
Printed Name	**Printed Name**
Duty Station	**Duty Station**

Task	A*	B*	C*	D*
Demonstrated knowledge of BLM Driving Policy per the *Interagency Standards for Fire and Fire Aviation Operations.*				
Completed an initial driver walk around.				
Demonstrated knowledge of completing a vehicle inspection utilizing the *Fire Equipment Maintenance and Procedure Record (FEMPR)* or equivalent.				
Demonstrated how to properly start up and shut down the vehicle. • Ensured gauges are functioning properly. • Allowed glow plugs to warm up. • Ensured seat belts were worn. • Performed driver adjustments. • Released/engaged parking brake.				
Demonstrated the following correct urban driving skills: • Started and stopped the vehicle on a flat surface, incline, and decline. • Merged with traffic. • Controlled vehicle speed for various road and traffic conditions while using proper gears. • Properly backed up the vehicle. • Correctly parked the vehicle. • Maneuvered in city traffic.				
Demonstrated the following off-highway driving skills: • Maneuvered along a two-track road. • Maneuvered through washouts and draws. • Maneuvered through rocky terrain utilizing a spotter. • Maneuvered on rough, steep slopes, and side hills.				
Maintained situational awareness. • Utilized spotters. • Established communication between spotter and driver. • Accounted for personal safety. • Utilized mirrors.				
Discussed proper methods and procedures for maneuvering through streams, waterways, or standing water.				
Demonstrated the ability to park and secure a vehicle at various locations; e.g., city/town, field environment, road shoulder, and work yard.				
Discussed and demonstrated use of the S.T.O.P. procedure.				

***Type of Vehicle Used:**

A) <26,000 GVWR ***(list type)***: _____

B) >26,000 GVWR ***(list type)***: _____

C) Hummer (650)

D) Super Heavy (668)

Student Signature	Date	Evaluator Signature	Date

NOTES