

Bureau of Land Management

FIRE VEHICLE

DRIVER ORIENTATION

BL-300



Instructor Lesson Plan
February 2014

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.

NOTES

DETAILED LESSON PLAN

CURRICULUM: BLM Fire Management

COURSE: Fire Vehicle Driver Orientation

SUGGESTED TIME: 1.5 hours classroom discussion
1.5 hours hands-on vehicle orientation and operations (outside exercises)

TRAINING AIDS

- ☐ Computer with CD-ROM capability
- ☐ Computer projector and projection screen
- ☐ Flip charts and markers
- ☐ *Interagency Standards for Fire and Fire Aviation Operations* (Red Book), current version

INSTRUCTIONS TO THE INSTRUCTOR

The instructor should review BLM policies and regulations regarding driving vehicles found in the Red Book in order to answer questions that may occur during the lecture.

The instructor needs to review and understand how to set up and run the outside exercises. Additionally, the instructor will need to find adequate space to conduct the exercises. The amount of time needed for these exercises will be dependent on class size and skill level.

The exercises give the student the opportunity to practice the principles learned during classroom instruction in a controlled environment. Evaluators will need to pay special attention to the student's comfort level and confidence. BL-300 is not intended to be a pass/fail course but an opportunity to orient students to equipment, operating rules, laws and procedures. Additional instruction may be needed throughout the season to enhance the student's driving development process.

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.

NOTES

OUTLINE	AIDS AND CUES
Present course objectives.	Slides 1, 2, 3
I. BUREAU POLICIES	Slide 4/SWB p. 2
A. Drug-free Workplace	Slide 5
No one who is mentally or physically impaired (overly tired, on medication, intoxicated, etc.) will be permitted to drive an engine or other vehicle.	Red Book
B. Vehicle Operation	
1. 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.	Red Book
2. Posted speed limits will <u>not</u> be exceeded. Lower speeds may be necessary during poor weather conditions or changing environmental conditions.	
3. 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.	

OUTLINE	AIDS AND CUES
• 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. II. 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 <u>not</u> be moved until all four items in the S.T.O.P. procedure are addressed. A. “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.	Slide 6/SWB p. 3 Slide 7

OUTLINE	AIDS AND CUES
• The driver is responsible for asking passengers if they are wearing their seat belts and ensuring that they are worn at all times. B. “T” – Tools and equipment stowed? • Ensure all tools and equipment is secured in cabinets or approved storage areas before moving the vehicle. C. “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. D. “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. III. 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.	Slide 8 Slide 9 Slide 10 Slide 11/SWB p.4 Slide 12

OUTLINE	AIDS AND CUES
All BLM fire vehicles inspections will be documented in the <i>Fire Equipment Maintenance Procedure and Record</i> (FEMPR) or equivalent.	Red Book
V. WORKING NEAR A MOVING VEHICLE When working in close proximity to a moving vehicle, there is an increased risk for an accident to occur. A. 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. 	Slide 17/SWB p. 5
Notify students that the letters correspond with the zone color. G – Green, Y – Yellow, and R – Red.	
1. Green Zones	Slide 18
The green zones are located directly left and right of the vehicle. - Whenever possible, operate in the green zone. - The green zones <u>usually</u> allow for visual contact with the operator.	Slide 19

OUTLINE	AIDS AND CUES
2. Yellow Zones Yellow zones are limited visibility and mirror use areas. • Notify the driver when you are in these areas. 3. 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. B. 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.	Slide 20/SWB p. 6 Slide 21 Slide 22

OUTLINE	AIDS AND CUES
– 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.	
VI. SITUATIONAL AWARENESS (SA)	Slide 26
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.	Slide 27
A. 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.	Slide 28
• Understand the vehicle danger zones.	Slide 29

OUTLINE	AIDS AND CUES
Ask the students what they see now. This engine was responding to a fire on this two-track road when the road gave way and the engine rolled. The stream had cut into the bank and undercut the road. Ask the students what could have been done to mitigate this hazard. Possible answer: Spotter walking out (scouting) in front of the vehicle.	Slide 33
2. General Surroundings • Rock piles/rock outcroppings • Ravines/cliffs • Damaged roads and/or bridges	Slide 34
Ask the students if they would drive their vehicle over this bridge. What types of things can they do to mitigate the potential for risk? Possible answer: Inspect the bridge, look for alternate routes, and use a spotter.	Slide 35
D. Vehicle Placement at the Fireline	Slide 36
1. 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 <u>not</u> block traffic or other fire vehicles.	Slide 37
• Leave keys in unattended fire vehicles during fire operations.	Slide 38

OUTLINE	AIDS AND CUES
• Roll up windows. • When possible, park in the black. – Watch for hot spots under tires. – Watch for venting fuel from vehicle fuel tanks. 2. Fireline Hazards Be aware of fireline hazards (snags, rolling debris, etc.) when parking the vehicle. 3. 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 <u>not</u> 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).	Slide 39 SWB p. 9

OUTLINE	AIDS AND CUES
– Assure the chocks are approved to hold the weight of the engine and will grip the road surface.	
VII. 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.	Slide 40
A. 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 may need 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.	Slide 41
B. Driver Adjustments • Adjust the driver's seat. • Adjust mirrors for proper alignment and maximum view.	Slide 42
C. Power Control Console Some fire vehicles have a power control console that contains the power switches to operate the following features:	Slide 43 SWB p. 10

OUTLINE	AIDS AND CUES
• Emergency Lighting Switches – Activate the emergency lights.	Slide 44
• Body Master Switch – If equipped, this switch provides power to the fire package.	Slide 45
• Pump Master Switch – Provides power to the pump.	Slide 46
• Radio Master Switch –If equipped, this switch provides power to the radio.	Slide 47
D. 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).	Slide 48
E. Manual Transmissions The clutch must be depressed to start vehicles equipped with manual transmissions.	Slide 49
F. Ignition Start the engine by turning the ignition key. • Allow glow plugs to warm up. • Ensure water and glow plug indicator lights go off.	Slide 50
G. 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.	

OUTLINE	AIDS AND CUES
H. Gauges All gauges should display within normal operating ranges.	Slide 51
I. Parking Brake Release the parking brake.	SWB p. 11
1. 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.	Slide 52
2. 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.	Slide 53
J. Diesel Particulate Filter (DPF) Operations 1. How the DPF Works	Slide 54

OUTLINE	AIDS AND CUES
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. 2. Filter Regeneration a. Passive 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. b. Active Regeneration 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.	Slide 55 Slide 56 SWB p. 12

OUTLINE	AIDS AND CUES
VIII. 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 2 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.	Slide 57 Slide 58
IX. SHIFTING MANUAL TRANSMISSIONS A. 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. B. Up Shifting 1. Bring the tachometer to between 2,500 and 3,000 RPM. 2. Depress the clutch.	Slide 59 Slide 60 Slide 61

OUTLINE	AIDS AND CUES
3. Shift to a higher gear. 4. Let the clutch out slowly as you slowly depress accelerator.	
C. 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.	Slide 62 SWB p. 13
D. 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.	Slide 63
X. AUTOMATIC TRANSMISSIONS	Slide 64
A. 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.	Slide 65

OUTLINE	AIDS AND CUES
B. Select the Proper Gear for Travel C. 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.	
XI. AIR BRAKE USE A. Normal Stops • Apply the brakes 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. B. 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. C. General Braking and Stopping Issues • Allow for extra stopping distance when driving a vehicle with extra passengers or a heavy load.	Slide 66/SWB p.14 Slide 67 Slide 68 Slide 69

OUTLINE	AIDS AND CUES
• 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).	
XII. TERRAIN CONCERNS IN OFF-ROAD VEHICLE DRIVING	Slide 70
A. Mud and Sand Areas • Make sure the 4-wheel drive hubs and transfer case are engaged before entering the area. • Maintain momentum. • Keep front tires straight. • Maintain a smooth, steady speed.	Slide 71
B. 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	Slide 72 SWB p. 15

OUTLINE	AIDS AND CUES
• 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	Slide 73
C. Hills • Select the proper gear before climbing a hill. – Do <u>not</u> 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.	Slide 74
D. 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	Slide 75
E. 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.	Slide 76

OUTLINE	AIDS AND CUES
Remember to scout out water crossings, checking the water depth and stream bed condition prior to making the crossing.	
XIII. OUTSIDE EXERCISES	Slide 77
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.	Slide 78 SWB. P 16
This may be the first time that the student has operated a vehicle of this type. Evaluators must pay special attention to the student's comfort and confidence levels.	
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.	Slide 79
Present the Fire Vehicle Driving Orientation (BL-300) Student Evaluation to students.	Slides 80 and 81 SWB p. 17

OUTLINE	AIDS AND CUES
XIV. CONCLUSION	Slide 82
A. 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!	Slide 83
B. Review Course Objectives	Slides 84 and 85

OUTSIDE EXERCISES

Exercise Intent:

The intent of the outside exercises is to allow the student to become familiar with driving a vehicle in a controlled environment. Instructors will evaluate and provide immediate feedback to students on their driver walk-around inspections, driving situational awareness (SA), use of the S.T.O.P. procedure, and handling and maneuvering capabilities (vehicle control).

Materials/Equipment:

- ☐ Vehicle(s) similar to what each student will be assigned
- ☐ Fire Vehicle Driving Orientation Student Evaluation (one for each student)
- ☐ Evaluator(s) for each vehicle

Evaluator/Facilitator Information:

- As appropriate, present each scenario and task to students and participants.
- Stage tools and equipment on or around the vehicle for the students to identify and mitigate for each exercise. Create situations (cabinet doors left open, wheels not chocked, passengers not seat belted, personnel on or around engine, etc.) for the student to identify and correct prior to moving the engine.
- Talk to each driver and verbally critique each driver's performance. Give the students feedback to improve their driving skills and SA.
- Discuss with students what could have been done differently.

EXERCISE #1

Driver Walk-Around

Scenario: You have been asked to do a driver walk-around on a vehicle in preparation for driving. A few passengers are getting their gear ready to load on the vehicle.

Task 1: Properly perform a driver walk-around following the procedures as described in the during classroom instruction.

Task 2: Have the passengers load their gear and themselves in the vehicle, and then prepare to leave for a new location in the yard.

EXERCISE #2

Vehicle Start-up and Shut-down

Scenario: You have been asked to perform a complete and correct vehicle start-up and shut-down procedure.

Task 1: Correctly start up the vehicle in preparation for movement. Remove chock and place onboard the vehicle, power up all necessary systems, make all driver adjustments, ensure all gauges are operating in the optimum range, engage transmission is in correct gear, release parking break, and pull forward.

Task 2: Correctly shut down the vehicle. Power down all necessary systems, place transmission in correct gear, apply parking break, and chock engine.

EXERCISE #3

Driver Situational Awareness (SA)

Scenario: You have been asked to back up a vehicle to a loading dock. Another passenger is getting his/her gear ready to load on the vehicle. Other personnel in the yard are doing the same thing in preparation for initial attack (IA) work. Multiple IA fires have been reported on the district from a storm that occurred the night before.

Task 1: Properly carry out the movement of the vehicle in the yard keeping in mind situational awareness.

EXERCISE #4

Vehicle Start-up and Driving

- Scenario: You have been asked to start and move a vehicle to a predetermined location in the BLM yard; there are other passengers in the vehicle.
- Task 1: Properly perform vehicle start-up by following the procedures as described during classroom instruction.
- Task 2: Once the vehicle has been started and all warning lights and buzzers are off, release the parking brake and move the vehicle to the predetermined parking spot.
- Task 3: After the vehicle has been moved to the designated spot, demonstrate proper shut-down procedures.

EXERCISE #5

Urban and Off-Road Driving

- Scenario: You have been asked to drive the vehicle in an urban and off-road setting.
- Task 1: Operate the vehicle in an urban setting while maintaining situational awareness.
- Task 2: Operate the vehicle in a pre-established, off-road setting, maneuvering along two-track roads, washouts and draws, and on steep slopes.
- Task 3: Utilize spotters while keeping the vehicle danger zones in mind.

EXERCISE #6

Backing and Spotter Use

- Scenario: You have been asked to start up and back up the vehicle to a predetermined location.
- Task 1: Position the vehicle to back into the predetermined spot.
- Task 2: Identify a spotter to assist you in backing and inform him/her how you are going to position the vehicle.
- Task 3: Utilize the vehicle mirrors to locate the spotter, honk horn, and proceed to back into the parking spot.
- Task 4: After the vehicle has been moved to the designated spot, demonstrate proper shut-down procedures.

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 <i>Interagency Standards for Fire and Fire Aviation Operations</i> .				
Completed an initial driver walk around.				
Demonstrated knowledge of completing a vehicle inspection utilizing the <i>Fire Equipment Maintenance and Procedure Record (FEMPR)</i> 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.				
Discuss and demonstrated the use of the Operator Command Regeneration System (OCR), if equipped.				

***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