

Bureau of Land Management  
**ENGINE**  
DRIVER ORIENTATION  
BL300



**Instructor Lesson Plan**

**January 2008**

## INTRODUCTION

Driving is one of the most hazardous endeavors we engage in during the course of our jobs. Vehicle-related accidents are often one of the leading causes of firefighter deaths annually.

Every year accidents result in significant expenditures from damage to property and equipment, not to mention the costs associated with medical treatment and loss of time and productivity of injured employees. 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 goal of the Engine Driver Orientation course is to provide all personnel with the foundation of knowledge to make sound decisions and maintain situational awareness while operating and working around engines so that everyone comes home safely.

This training is the first part of a process to train and educate entry level and first year BLM engine crewmembers to drive or move an engine in an emergency situation or around the parking lot of a governmental site. For engines not covered by the Commercial Driver's License (CDL) requirements, this could also mean running for parts in town, driving the engine in fire camp (fueling or getting supplies), and repositioning the engine on the fireline. For engines covered by CDL requirements, the driver would need a CDL training/learner permit, and a qualified CDL passenger in the cab to run for parts, drive in fire camp, and reposition an engine on the fireline.

## NOTES

## DETAILED LESSON PLAN

CURRICULUM: BLM Fire Management

COURSE: Fire Engine Driver Orientation

SUGGESTED TIME: 1½ hour classroom discussion  
1½ hour 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*—current version (also referred to as the “Redbook”)

### INSTRUCTIONS TO THE INSTRUCTOR

The intent of this training is to provide engine fire personnel with the basic knowledge to safely start and move a fire vehicle during an emergency situation. The target audience is any BLM person who will be working on or around BLM engines.

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.

The instructor needs to review and understand how to set up and run the outside exercises on driving or moving engines. The instructor will need to find adequate space for the exercises to be run. The amount of time to allocate for these exercises per student will be dependent on class size and skill level.

The exercises give the student the opportunity to practice the principles learned during classroom instruction. This may be the first time the student has ever operated a vehicle of this type. Evaluators will need to pay special attention to the student’s comfort level and confidence. This course is not pass/fail, but is an orientation opportunity. Additional instruction will be needed throughout the season to assist the student’s driving development process.

The instructor should review BLM policies and regulations on driving vehicles in order to answer questions that may come up during the lecture.



# **FIRE ENGINE DRIVER ORIENTATION**

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## **COURSE OBJECTIVES**

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

- Engage in a discussion about bureau policies and regulations related to driving a government engine.
- Perform a driver walk-around inspection.
- Describe and demonstrate the S.T.O.P. procedure.
- Correctly start and move a parked engine to another location.
- Demonstrate engine maneuvering procedures 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
<p><b>Present course objectives.</b></p>	<p>Slides 1, 2, 3</p>
<p>I. BUREAU POLICIES</p> <p>A. Drug-Free Work Place</p> <p>No one who is mentally or physically impaired (overly tired, on medication, intoxicated, etc.) will be permitted to drive an engine or other vehicle.</p> <p>B. Engine Operation</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Posted speed limits will <u>not</u> be exceeded. Lower speed limits should be used during poor weather conditions or changing environmental conditions.</li> <li>3. You must have a current state driver’s license in your possession for the appropriate vehicle class before operating the engine. <ul style="list-style-type: none"> <li>• A CDL Instruction Permit is available by taking the appropriate written tests for the type of vehicle you will operate. <ul style="list-style-type: none"> <li>– An instruction permit is valid for up to 180 days.</li> <li>– A Commercial Driver’s License (CDL) Instruction Permit driver must be accompanied by a person who has a valid CDL license and is seated beside the driver.</li> </ul> </li> </ul> </li> </ol>	<p>Slide 4</p> <p>“Redbook”</p> <p>“Redbook”</p>

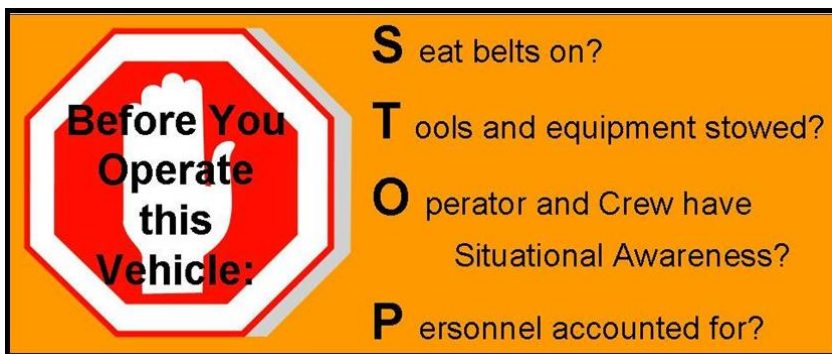
OUTLINE	AIDS AND CUES
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- A Commercial Driver’s License (CDL), with appropriate endorsements is required when:
  - The engine GVWR is 26,000 lbs or more.
  - Towing a vehicle 10,000 lbs GVRW or more.
  - Hauling hazardous material requiring the vehicle to be placarded.

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

All drivers of fire engines are responsible to use the S.T.O.P. procedure when preparing to move or drive an engine. The engine will not be moved until all four items in the S.T.O.P. procedure are addressed.

Slide 5




**S.T.O.P. procedure stickers are available through the Equipment Development Unit at NIFC (208-387-5423).**

- 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

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>The driver is responsible for asking passengers if they are wearing their seat belts and ensuring that they are worn at all times.</li> </ul>	
<p>B. “T” – Tools and equipment stowed?</p> <ul style="list-style-type: none"> <li>Ensure that all tools and equipment are secured in cabinets or approved storage areas before moving the engine.</li> </ul>	Slide 7
<p>C. “O” – Operator (driver) and crew have situational awareness?</p> <ul style="list-style-type: none"> <li>Determine if the engine is clear of hazards.</li> <li>Never back a engine without checking behind the vehicle.</li> <li>Utilize spotters (vehicle occupants) whenever possible.</li> </ul>	Slide 8
<p>D. “P” – Personnel accounted for?</p> <ul style="list-style-type: none"> <li>Ensure all personnel are accounted for and their locations are known.</li> <li>Communicate your intentions to all personnel before moving the vehicle.</li> </ul>	Slide 9
<p>III. DRIVER WALK-AROUND</p>	
<p>The driver walk-around will be done every time the engine is moved. This allows the driver to complete a 360° visual inspection of the engine.</p>	Slide 10
<p>The walk-around begins as you approach the engine and continues in a clockwise direction beginning and ending at the driver’s side door.</p>	
<p>Things to be looking for before moving the engine include:</p> <ul style="list-style-type: none"> <li>Rocks in the way of tires</li> </ul>	Slide 11

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>• Holes, berms, ditches, etc.</li> <li>• Large stobbs or downed trees</li> <li>• Chock blocks secured and in place</li> <li>• Gear or equipment around or under engine</li> <li>• Vehicles parked behind the engine</li> <li>• Personnel relaxing or sleeping around engine</li> <li>• Body damage while away from the engine</li> <li>• Cabinet doors closed</li> <li>• Side and overhead clearance in and near the path your vehicle will travel</li> </ul>	Slide 12
<p>IV. PRE-TRIP INSPECTION/PREVENTATIVE MAINTENANCE CHECK</p> <p>A fire engine pre-trip inspection is done to help the engine 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.</p> <ul style="list-style-type: none"> <li>• Should be performed daily, generally at the beginning of each shift, even if the vehicle is not moved.</li> <li>• All BLM engine and water tender pre-trip inspections will be documented in the <i>Fire Engine Maintenance Procedure and Record (FEMPR)</i>.</li> <li>• This inspection is <u>not</u> the responsibility of a first- or second-year engine crewmember. <ul style="list-style-type: none"> <li>– The first- or second-year crewmember will usually help in completing this inspection, however.</li> </ul> </li> </ul>	Slide 13  “Redbook”  “Redbook”

OUTLINE	AIDS AND CUES
<p>V. ENGINE SPOTTER USAGE</p> <p>If there are two or more engine crewmembers, always use a spotter. There are blind spots or danger zones where you cannot see. If you are by yourself and there are other firefighters around, ask for help.</p> <p>If you are alone and have no help, get out of the engine and do a visual check for yourself.</p>	<p>Slide 14</p>
<p>A. Engine Danger Zones</p> <p>When working in close proximity of a moving engine, there is an increased risk for an accident to occur. Given the size of our engines and the environment we work in, there are operator “blind spots” or danger zones. This visual aid was developed to help in identifying these areas.</p>	<p>Slide 15</p> <p>Slide 16</p>
	
<p><b>Notify students that the letters correspond with the zone color. G – Green, Y – Yellow, and R – Red.</b></p>	
<p>1. Green Zones</p> <p>The green zones are located directly left and right of the fire engine.</p> <ul style="list-style-type: none"> <li>• Whenever possible, operate in the green zone.</li> <li>• The green zones <u>usually</u> allow for visual contact with the operator.</li> </ul>	<p>Slide 17</p>

OUTLINE	AIDS AND CUES
<p>2. Yellow Zones</p> <p>Yellow zones are limited visibility and mirror use areas.</p> <ul style="list-style-type: none"> <li>• Notify the driver when you are in these areas.</li> </ul>	
<p>3. Red Zones</p> <p>The red zones are located directly in front and behind the fire engine.</p> <ul style="list-style-type: none"> <li>• Never work in the red areas while the engine is moving.</li> <li>• Notify the driver prior to entering red zones.</li> <li>• Stay out of the red zone where the driver has no visual.</li> </ul>	Slide 18
<ul style="list-style-type: none"> <li>• The red area in front of the engine extends 10 feet out from the front bumper.</li> <li>• You must have visual contact with the driver when working in front of the vehicle beyond the 10-foot range.</li> </ul>	Slide 19
<p>B. When to Use a Spotter</p> <p>Spotters should be used when</p> <ul style="list-style-type: none"> <li>• Backing up</li> <li>• Off-road pioneering</li> <li>• Hazardous conditions exist</li> <li>• Low vehicle clearances exist</li> <li>• Narrow/confined driving spaces exist</li> </ul>	Slide 20

OUTLINE	AIDS AND CUES
<p>C. Spotter Techniques</p> <ul style="list-style-type: none"> <li>• Spotter should have a clear line of sight to the driver. Spotter position should be located as follows: <ul style="list-style-type: none"> <li>– Forward movement: Outside the forward red zone on the driver side windshield</li> <li>– Backing movement: Outside the rear red zone on the driver side mirror</li> </ul> </li> <li>• Spotter and driver should understand a common set of hand signals.</li> </ul>	<p>Slide 21</p>
<div style="border: 2px solid black; padding: 5px; display: inline-block;"> <b>Instructors should review with students the hand signals that are used on the local unit.</b> </div>	
<ul style="list-style-type: none"> <li>• Spotter and driver need to communicate on the planned action. <ul style="list-style-type: none"> <li>– Where are we going to park?</li> <li>– How far off the shoulder do we want to be?</li> <li>– What areas are we going to be traveling through?</li> </ul> </li> <li>• Spotter distance from engine will depend on various situations at the time of the maneuver; however, visual contact between spotter and driver shall not be compromised.</li> <li>• If driver loses sight of the spotter, the driver should stop immediately and determine the spotter's location.</li> </ul>	<p>Slide 22</p>



OUTLINE	AIDS AND CUES
<p>C. Pay Attention to Your Surroundings</p> <p>1. Immediate Surroundings</p> <ul style="list-style-type: none"> <li>• Road conditions and type</li> <li>• Road shoulders</li> <li>• Clearances</li> <li>• Ground cover and type</li> </ul>	Slide 28
<p><b>Ask the students what they see in the red circle of the picture and what they see on this two-track road.</b></p>	
<p><b>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. Maybe a spotter walking out front (pioneering) of this narrow road might have prevented this accident.</b></p>	Slide 29
<p>2. General Surroundings</p> <ul style="list-style-type: none"> <li>• Rock piles/rock outcroppings</li> <li>• Ravines/cliffs</li> <li>• Damaged roads and/or bridges</li> </ul>	Slide 30
<p><b>Ask the students if they would drive a Type 4 engine over this bridge.</b></p>	Slide 31
<p>D. Engine Placement at the Fireline</p>	Slide 32
<p>1. Ingress and Egress</p> <ul style="list-style-type: none"> <li>• Never drive an engine into a place where you cannot exit easily.</li> <li>• Parked engines need to be faced towards an exit (escape route).</li> </ul>	Slide 33

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>• Do <u>not</u> block traffic or other fire vehicles.</li> <li>• Leave keys in unattended engines during fire operations.</li> <li>• In unattended engines, windows should always be rolled up.</li> <li>• When possible park engines in the black. <ul style="list-style-type: none"> <li>– Watch for hot spots under tires.</li> <li>– Watch for venting fuel from engine fuel tanks.</li> </ul> </li> </ul>	<p>Slide 34</p>
<p>2. Fireline Hazards</p> <p>Be aware of fireline hazards when parking the engine (snags, rolling debris, etc.)</p>	<p>Slide 35</p>
<p>3. Parking on a Hill</p> <ul style="list-style-type: none"> <li>• Turn the wheels uphill or into the inside/embankment.</li> <li>• Firmly set the emergency brake or parking brake.</li> <li>• Put shifter in “Park” (if automatic transmission) or in a forward gear (if manual transmission); do not leave the transmission in neutral.</li> <li>• Turn off the engine.</li> <li>• Chock the wheels. <ul style="list-style-type: none"> <li>– When utilizing chocks, make sure they are on the correct side in reference to the slope.</li> </ul> </li> </ul>	

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>- When working in hilly areas along roads during pumping operations and the engine must be moved frequently, always use chocks keeping in mind slope changes.</li> <li>- Assure the chocks are approved to hold the weight of the engine and will grip the road surface.</li> </ul>	
<p>VII. STARTING THE ENGINE</p> <p>Starting a BLM fire engine is not like starting your truck or car that most of you drove to work today. Not only do we have to deal with the complicated diesel motors of today but also the integrated fire package system.</p>	Slide 36
<p>There are other components, gauges, and switches that need to be tended to before starting the engine. We will take a look at these components, gauges, and switches as we go through this section.</p>	Slide 37
<p>A. Battery ON/OFF Switch</p> <p>Most BLM engines will have a battery ON/OFF switch located inside the driver side door next to the driver's seat.</p> <ul style="list-style-type: none"> <li>• This switch needs to be in the "ON" position for the engine to start and pump to run.</li> <li>• When leaving the engine unattended, you should turn the battery ON/OFF switch to the "OFF" position to avoid battery drain.</li> </ul>	Slide 38
<p>B. Driver Adjustments</p> <ul style="list-style-type: none"> <li>• Adjust the driver's seat. <ul style="list-style-type: none"> <li>- Type 4 and Type 3 engine seats are air adjusted by a valve under the seat.</li> </ul> </li> </ul>	Slide 39

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>- Type 6 engine seats are adjusted by conventional means.</li> <li>• Adjust driving mirrors for proper alignment and maximum view.</li> </ul>	
<p>C. Power Control Consol</p> <p>Most fire engines have a power control consol that contains the power switches to operate the following features:</p>	Slide 40
<ul style="list-style-type: none"> <li>• Emergency Lighting – Activates the emergency lights</li> </ul>	Slide 41
<ul style="list-style-type: none"> <li>• Body Master – Provides power to the fire package</li> </ul>	Slide 42
<ul style="list-style-type: none"> <li>• Pump Master – Provides power to the pump</li> </ul>	Slide 43
<ul style="list-style-type: none"> <li>• Radio – Provides power to the radio</li> </ul>	Slide 44
<p>D. Automatic Transmissions</p> <p>Engines equipped with an automatic transmission must be in the “Park” (“P”) position or “Neutral” (“N”) position to start (varies by transmission manufacturer/model).</p>	Slide 45
<p>E. Manual Transmissions</p> <p>The clutch must be depressed to start engines equipped with manual transmissions.</p>	Slide 46
<p>F. Ignition</p> <p>Start the motor by turning the ignition key.</p> <ul style="list-style-type: none"> <li>• Allow glow plugs to warm up.</li> <li>• Watch to see that water and glow plug indicator lights go off.</li> </ul>	Slide 47

OUTLINE	AIDS AND CUES
<p>G. Alarms and Buzzers</p> <ul style="list-style-type: none"> <li>• All alarms and buzzers should sound or come on.</li> <li>• Wait for alarms and buzzers to go off before releasing the parking brake.</li> </ul>	
<p>H. Gauges</p> <p>All gauges should display within normal operating ranges.</p>	Slide 48
<p>I. Parking Brake</p> <p>Release the parking brake.</p>	
<p>1. Air Brake System</p> <ul style="list-style-type: none"> <li>• Drivers will need to release the parking break by firmly pushing in the parking brake control. <ul style="list-style-type: none"> <li>– This diamond-shaped, yellow, push-pull control knob is located on the vehicle dashboard and within the driver’s reach.</li> </ul> </li> </ul>	Slide 49
<p>2. Hydraulic Brake System</p> <ul style="list-style-type: none"> <li>• Drivers will need to release the parking break by firmly pushing in, or pulling out, the parking brake control. <ul style="list-style-type: none"> <li>– This may be a foot pedal or in-dash lever.</li> </ul> </li> </ul>	Slide 50
<p>VIII. STEERING WHEEL HAND POSITIONS AND TURNING TECHNIQUE</p> <ul style="list-style-type: none"> <li>• Place hands at the 10- and 2-o’clock positions on the steering wheel.</li> </ul>	Slide 51

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>• Place your thumbs on the outside of the wheel. <ul style="list-style-type: none"> <li>– This helps to avoid injury in the event the steering wheel reacts to the front tires hitting an object such as a rock.</li> </ul> </li> <li>• Maintain the proper hand position for all driving conditions.</li> <li>• Use the hand-over-hand technique when turning.</li> </ul>	
<p>IX. SHIFTING MANUAL TRANSMISSIONS (4- OR 5-SPEED)</p> <p>A. Starting the Engine</p> <ol style="list-style-type: none"> <li>1. Depress the clutch.</li> <li>2. Select the proper gear. <ul style="list-style-type: none"> <li>• Second gear (generally) when starting on level ground</li> <li>• First gear when starting on steep slopes</li> </ul> </li> </ol> <p>B. Up Shifting</p> <ol style="list-style-type: none"> <li>1. Bring the tachometer to between 2,500 and 3,000 RPM.</li> <li>2. Depress the clutch.</li> <li>3. Shift to a higher gear.</li> </ol>	<p>Slide 52</p>
<p>C. Down Shifting</p> <ol style="list-style-type: none"> <li>1. Bring the tachometer to 1,500 RPM (avoid lugging the engine).</li> <li>2. Depress the clutch.</li> <li>3. Shift to a lower gear.</li> </ol>	<p>Slide 53</p>

OUTLINE	AIDS AND CUES
<p>D. Starting on a Hill or Slope</p> <ol style="list-style-type: none"> <li>1. Set the parking brake.</li> <li>2. Put right foot on brake; left foot on clutch.</li> <li>3. Shift into first gear.</li> <li>4. Let clutch out slowly as you slowly depress accelerator.</li> <li>5. Feel a pull forward; then release the parking brake.</li> <li>6. Maintain RPM through the climb.</li> </ol>	Slide 54
<p>X. AUTOMATIC TRANSMISSION</p> <p>A. Starting the Engine</p> <ul style="list-style-type: none"> <li>• Start the engine in park.</li> <li>• Put right foot on the brake pedal.</li> </ul> <p>B. Select the Proper Gear for Travel</p> <ul style="list-style-type: none"> <li>• First or second – low-speed crawl out</li> <li>• Second through fourth – city driving</li> <li>• Second through fifth – highway driving</li> </ul> <p>C. Putting the Engine in Motion</p> <ul style="list-style-type: none"> <li>• Release the brake pedal, and drive in proper gear.</li> <li>• If the transmission shifts constantly, go to a lower gear selection.</li> </ul>	Slide 55

OUTLINE	AIDS AND CUES
<p>XI. AIR BRAKE USE</p> <p>A. Normal Stops</p> <ul style="list-style-type: none"> <li>• Apply the brakes hard at first and gradually release as speed is reduced.</li> <li>• Do not “fan” the brakes. <ul style="list-style-type: none"> <li>– “Fan” refers to the repeated rapid application and releasing of the air brakes during a stop.</li> <li>– Avoid this action since it results in poor brake performance lowering the reservoir and air line pressures.</li> </ul> </li> </ul>	Slide 56
<p>B. Downhill Runs</p> <ul style="list-style-type: none"> <li>• Use the proper gear reduction to maintain the engine at a safe speed.</li> <li>• Brake application can be made intermittently to keep the engine well under control.</li> </ul>	Slide 57
<p>C. General Braking and Stopping Issues</p> <ul style="list-style-type: none"> <li>• Allow for extra stopping distance since a fire engine is heavier than your personal vehicle.</li> <li>• Be aware that water in the tank can slosh around even in a baffled tank.</li> <li>• There is more slippage when braking on gravel roads than on paved roads.</li> <li>• Apply gentle but firm pressure on the brake pedal. <ul style="list-style-type: none"> <li>– Do not lock up the wheels (dynamite braking).</li> </ul> </li> </ul>	Slide 58

OUTLINE	AIDS AND CUES
<p data-bbox="201 254 1057 331">XII. TERRAIN CONCERNS IN OFF-ROAD VEHICLE DRIVING</p> <p data-bbox="277 369 667 405">A. Mud and Sand Areas</p> <ul data-bbox="354 443 1084 743" style="list-style-type: none"> <li data-bbox="354 443 1084 527">• Make sure the 4-wheel drive transfer case is engaged before entering the area.</li> <li data-bbox="354 558 748 594">• Maintain momentum.</li> <li data-bbox="354 632 792 667">• Keep front tires straight.</li> <li data-bbox="354 705 922 743">• Maintain a smooth, steady speed.</li> </ul> <p data-bbox="277 779 505 814">B. Side Hills</p> <ul data-bbox="354 852 1114 1675" style="list-style-type: none"> <li data-bbox="354 852 1114 936">• Be aware of water load shifting (weight transfer). <ul data-bbox="430 968 984 1003" style="list-style-type: none"> <li data-bbox="430 968 984 1003">– Full versus partial tank of water</li> </ul> </li> <li data-bbox="354 1041 1114 1125">• Be aware of how load structuring affects your center of gravity. <ul data-bbox="430 1157 626 1339" style="list-style-type: none"> <li data-bbox="430 1157 626 1192">– Coolers</li> <li data-bbox="430 1230 594 1266">– Packs</li> <li data-bbox="430 1304 586 1339">– Hose</li> </ul> </li> <li data-bbox="354 1377 1114 1461">• Be aware of soil types the engine is traveling over and their effects on sliding or rollovers <ul data-bbox="430 1493 776 1675" style="list-style-type: none"> <li data-bbox="430 1493 776 1528">– Loose and sandy</li> <li data-bbox="430 1566 646 1602">– Hard pan</li> <li data-bbox="430 1640 776 1675">– Rocky or gravelly</li> </ul> </li> </ul> <p data-bbox="277 1713 423 1749">C. Hills</p> <ul data-bbox="354 1787 1097 1938" style="list-style-type: none"> <li data-bbox="354 1787 1097 1871">• Select the proper gear before climbing a hill. <ul data-bbox="430 1860 1052 1938" style="list-style-type: none"> <li data-bbox="430 1860 1052 1938">– Do <u>not</u> force shifting while on a hill; you could miss a gear and stall.</li> </ul> </li> </ul>	<p data-bbox="1146 369 1268 405">Slide 59</p> <p data-bbox="1146 779 1268 814">Slide 60</p> <p data-bbox="1146 1377 1268 1413">Slide 61</p> <p data-bbox="1146 1713 1268 1749">Slide 62</p>

OUTLINE	AIDS AND CUES
<ul style="list-style-type: none"> <li>• Down shift on the crest of a hill before descending. <ul style="list-style-type: none"> <li>– This prevents free wheeling and missing a gear.</li> </ul> </li> </ul> <p>D. Road Shoulders or Dozer Berms</p> <ul style="list-style-type: none"> <li>• Understand an engine’s center of gravity when going over or coming out of road shoulders or dozer berms.</li> <li>• Understand break-over angles when going over or coming out of road shoulders or dozer berms.</li> </ul>	<p>Slide 63</p>
<p>XIII. CONCLUSION</p> <p>A. Final Thoughts</p> <ul style="list-style-type: none"> <li>• Never move an engine without ensuring that personnel are clear! <ul style="list-style-type: none"> <li>– Use spotters where appropriate.</li> <li>– Honk the horn prior to moving an engine.</li> <li>– Buckle up!</li> </ul> </li> </ul> <p>B. Lesson Objectives</p>	<p>Slide 64</p> <p>Slides 65 and 66</p>
<p>XIV. OUTSIDE EXERCISES</p> <p>The outside exercises are made up of several driving stations and provides students the opportunity to practice in a controlled environment the principles learned during classroom instruction.</p>	<p>Slide 67</p>
<div style="border: 2px solid black; padding: 5px;"> <p><b>This may be the first time that the student has ever operated a vehicle of this type. Evaluators will need to pay special attention to the students comfort level and confidence.</b></p> </div>	



## NOTES

## 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:

- Engine similar to what the student will be assigned
- Type 4 and Type 6 engines—number depends on class size
- Fire Vehicle Driving Orientation Student Evaluation for each student
- Evaluators for the number of engines that will be used

### Evaluator/Facilitator Information:

- Present the scenario and task(s) to student.
- Stage tools and equipment on or around the engine for the students to identify and mitigate for each exercise. Create situations (cabinet doors left open, wheels unchoked, 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 ways 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 an engine in preparation for driving. A few crewmembers are getting their gear ready to load on the engine.

Task 1: Properly perform a driver walk-around following the procedures as described in the BLM Engine Driver Orientation course outline.

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

## EXERCISE # 2

### Engine Start-up

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

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

Task 2: Correctly shut down the engine. 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 an engine to a loading dock to load supplies and then move the engine to a water refill site. Another crewmember is getting his/her gear ready to load on the engine. Other engine crews 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 late the night before.

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

## EXERCISE # 4

### Engine Start-up and Driving

Scenario: You have been asked to start and move the engine to a predetermined location in the BLM yard; there are other crewmembers in the engine.

Task 1: Properly perform engine start-up by following the procedures as described in the BLM Engine Driver Orientation course outline.

Task 2: Once the engine 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 engine has been moved to the designated spot, demonstrate proper shut-down procedures.

## **EXERCISE # 5**

### **Backing and Spotter Use**

Scenario: You have been asked to start up and back up the engine to a predetermined location in the BLM yard.

Task 1: Position the engine to back into the predetermined spot.

Task 2: Identify a spotter to assist you in backing and inform them how you are going to position the engine.

Task 3: Utilize the engine mirrors to locate the spotter, honk horn, and proceed to back into the parking spot.

Task 4: After the engine has been moved to the designated spot, demonstrate proper shut-down procedures.

## NOTES

## FIRE VEHICLE DRIVING ORIENTATION STUDENT EVALUATION

Student: \_\_\_\_\_ Date: \_\_\_\_\_

Duty Station: \_\_\_\_\_ Vehicle used

Evaluator: \_\_\_\_\_ during evaluation: \_\_\_\_\_

<b>Engine Driver Orientation Checklist</b>		<b>Evaluator Initials</b>
<b>1.</b>	<b>Properly performed/described the S.T.O.P. procedure.</b>	
<b>2.</b>	<b>Completed driver walk-around.</b>	
	• Checked under and around engine.	
	• Ensured cabinets were secure.	
	• Ensured equipment was secure.	
	• Pulled chocks.	
	• Checked for clearance issues.	
<b>3.</b>	<b>Properly starts vehicle.</b>	
	• Ensured battery ON/OFF switch was in "ON" position.	
	• Ensured the body master switch was in "ON" position	
	• Ensured that seat belts were on.	
	• Performed driver adjustments.	
	• Ensured that gauges were functioning properly.	
	• Allowed glow-plugs to warm up.	
	• Released parking brake.	
	• Used proper gears.	
	• Engaged parking brake.	
	• Set chocks.	
<b>4.</b>	<b>Maintained situational awareness.</b>	
	• Utilized spotters.	
	• Ensured there was communication between spotter and driver.	
	• Understood engine danger zones.	
	• Accounted for personnel safety.	
	• Utilized mirrors.	
<b>5.</b>	<b>Performed smooth starts and brake application.</b>	
<b>6.</b>	<b>Correctly backed an engine.</b>	
<b>7.</b>	<b>Correctly parked an engine.</b>	
<b>8.</b>	<b>Properly shut down an engine.</b>	
<b>9.</b>	<b>Maintained control of vehicle.</b>	

