Engine Boss
S-231

NFES 1401

Student Workbook

MAY, 2004

CERTIFICATION STATEMENT

on behalf of the

NATIONAL WILDFIRE COORDINATING GROUP

The following training material attains the standards prescribed for courses developed under the interagency curriculum established and coordinated by the National Wildfire Coordinating Group. The instruction is certified for interagency use and is known as:

Engine Boss, S-231
Certified at Level I

This product is part of an established NWCG curriculum. It meets the COURSE DEVELOPMENT AND FORMAT STANDARDS – Sixth Edition, 2003 and has received a technical review and a professional edit.

Member NWCG and Training Working Team Liaison

Date 5/14/04

Chairperson, Training Working Team

Date 5/3/04

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Sponsored for NWCG publication by the NWCG Training Working Team.

Comments regarding the content of this publication should be directed to:
National Interagency Fire Center, National Fire Training Support Group, 3833 S. Development Ave., Boise, Idaho 83705. E-mail: nwcg_standards@nifc.blm.gov.

Additional copies of this publication may be ordered from National Interagency Fire Center, ATTN: Great Basin Cache Supply Office, 3833 South Development Avenue, Boise, Idaho 83705. Order NFES 1401.

Description of the Performance Based System

The NWCG Wildland and Prescribed Fire Qualifications System is a "performance-based" qualifications system. In this system, the primary criterion for qualification is individual performance as observed by an evaluator using approved standards. This system differs from previous wildland fire qualifications systems which have been "training based." Training based systems use the completion of training courses or a passing score on an examination as primary criteria for qualification.

A performance-based system has two advantages over a training based system:

- Qualification is based upon real performance, as measured on the job, versus perceived performance, as measured by an examination or classroom activities.

- Personnel who have learned skills from sources outside wildland fire suppression, such as agency specific training programs or training and work in prescribed fire, structural fire, law enforcement, search and rescue, etc., may not be required to complete specific courses in order to qualify in a wildfire position.

1. The components of the wildland fire qualifications system are as follows:

   a. Position Task Books (PTB) contain all critical tasks which are required to perform the job. PTBs have been designed in a format which will allow documentation of a trainee's ability to perform each task. Successful completion of all tasks required of the position, as determined by an evaluator, will be the basis for recommending certification.

      IMPORTANT NOTE: Training requirements include completion of all required training courses prior to obtaining a PTB. Use of the suggested training courses or job aids is recommended to prepare the employee to perform in the position.

   b. Training courses and job aids provide the specific skills and knowledge required to perform tasks as prescribed in the PTB.

   c. Agency Certification is issued in the form of an incident qualification card certifying that the individual is qualified to perform in a specified position.

2. Responsibilities

   The local office is responsible for selecting trainees, proper use of task books, and certification of trainees. See Appendix A of the NWCG Wildland and Prescribed Fire Qualification System Guide, PMS 310-1, for further information.

National Wildfire Coordinating Group
Training Working Team
Position on Course Presentation and Materials

The suggested hours listed in the Field Manager's Course Guide are developed by Subject Matter Experts based on their estimation of the time required to present all material needed to adequately teach the unit and course objectives. The hours listed can vary slightly due to factors such as the addition of local materials. NWCG is aware that there have been courses presented in an abbreviated form, varying greatly from the suggested course hours. Instructors and students are cautioned that in order to be recognized as an NWCG certified course certain guidelines must be followed. These guidelines are:

- Lead instructors are encouraged to enhance course materials to reflect the conditions, resources and policies of the local unit and area as long as the objectives of the course and each unit are not compromised.

- Exercises can be modified to reflect local fuel types, resources and conditions where the student will be likely to fill incident assignments. The objectives and intent of the exercises must remain intact.

- Test questions may be added that reflect any local information that may have been added to the course. However, test questions in the certified course materials should not be deleted to ensure the accurate testing of course and unit objectives.

- Test grades, to determine successful completion of the course, shall be based only on the questions in the certified course materials.

If lead instructors feel that any course materials are inaccurate, that information should be submitted by e-mail to NWCG Fire Training at nwcg_standards@nifc.blm.gov Materials submitted will be evaluated and, where and when appropriate, incorporated into the appropriate courses.

Course Length for NWCG Courses

If a course is available through PMS the *recommended* course hours and the "NWCG Position on Course Presentation and Materials" will be adhered to by the course instructors.

If the course is not available through PMS, e.g., L-380, and has been developed using NWCG course criteria, *minimum* course hour requirements have been established and must be adhered to by the course developer and the course instructors.

Course hours for all NWCG courses can be found in the Field Manager's Course Guide http://www.nwcg.gov/pms/training/fmcg.pdf. If the hours are a minimum versus recommended they will be stated as such.

ENGINE BOSS (Single Resource), S-231

PREFACE

This course has been developed by an interagency development group with guidance from the National Interagency Fire Center, Fire Training under the authority of the National Wildfire Coordinating Group (NWCG). The development group is made up of the following:

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DETAILED LESSON OUTLINE

NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 0 - Introduction

OBJECTIVES:

1. Introduce the course to the students.
2. Introduce the instructors and the course coordinator.
3. Introduce the students.
4. Identify and explain any administrative concerns.
5. Explain course process and expectations.

NOTES

I. COURSE OBJECTIVE

At the successful completion of this course students will be able to:

Perform the tasks of an Engine Boss in making the tactical decisions required to safely manage an engine and personnel on an incident.

II. THE INSTRUCTOR CADRE

Introduction of instructor cadre.

III. THE STUDENTS

All participants present the following information:

A. Name

B. Work place, e.g., agency, station.

C. Job title and their day to day duties

D. ICS qualifications

E. Most recent engine operator experience on an incident

IV. SCHEDULE OF EVENTS

A. Course agenda and review

B. Administrative concerns:

1. Breaks and punctuality

2. Location of coffee, tea, soda, candy/ vending machines

3. Cell phone policy

4. Message location and available telephones

5. Restrooms and drinking fountains

6. Other local concerns

NOTES

V. COURSE OVERVIEW

A. This course was developed from the tasks outlined for Engine Boss in the Single Resource Boss Position Task Book.

B. Required training: Crew Boss (Single Resource), S-230 and Intermediate Wildland Fire Behavior, S-290

Suggested training which supports development: Basic ICS, I-200; Engine Boss, S-231; Ignition Operations, S-234; Interagency Incident Business Management, S-260; Basic Air Operations, S-270

C. Many of the administrative duties required of the Engine Boss are covered in S-230 Crew Boss training. These duties will not be addressed in this course unless necessary.

D. The Fireline Handbook, Incident Response Pocket Guide, and the Wildland Fire Suppression Tactics Reference Guide are used in this course for reference.

NOTES

VI. COURSE PROCESS

A. This course consists of lecture material, simulated incident exercises, and situations that require the students to perform the duties of an Engine Boss both in the classroom and the field.

B. Students will periodically work in small groups for interactive exercises and simulations.

C. This course is designed to emphasize the primary skills needed by an Engine Boss. It is not intended to cover every detail of the position.

D. Trainee Job Description For The Engine Boss.

1. Review the position description for single resource boss in the Operations section of the Fireline Handbook.

2. Compare the position description in the Fireline Handbook to the Engine Boss, section of the Position Task Book for Single Resource Boss.

3. Develop a brief job description for the position of Engine Boss.

VII. EVALUATION

A. Measuring Performance For This Course.

1. There are 31 questions on the final examination worth a total of 100 points.

2. Students must accumulate 70 percent, or 70 total points, on the final examination in order to receive credit for successfully completing this course.

B. Student Final Course Evaluation.

1. A tool used for analysis and future course improvements.

2. Must be completed by every student before they leave the training session.

NOTES

VIII. EXPECTATIONS

A. Student Expectations Question

What do you expect from this training session?

B. Expectations of the students for the course.

The students will:

- Have an interest in becoming an Engine Boss.
- Exhibit mutual cooperation with the group.
- Participate actively in all exercises, simulations, and discussions in this course.
- Be open minded to the materials presented during this training session.
- Use what is presented in the course to perform as an Engine Boss.
- Return to class at stated times.

0.6

DETAILED LESSON OUTLINE

NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 1 - Engine and Crew Capabilities and Limitations

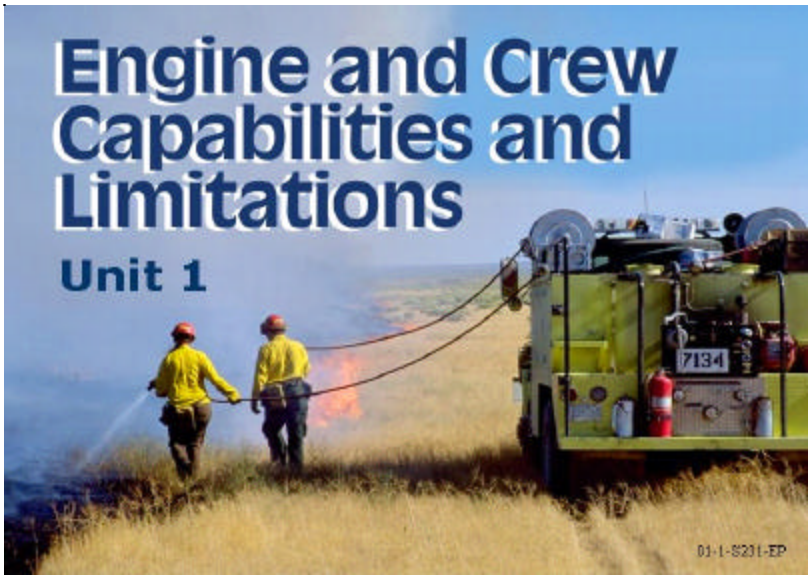
OBJECTIVES: Upon completion of this unit, the student will be able to:

1. Identify engine capabilities and limitations that the Engine Boss must consider when deciding to attempt an assignment.

2. Describe assignments that require specialized training of engine crew members.

3. Describe the observations the Engine Boss must make of crewmembers to insure safety is not compromised.

4. Describe the criteria used to maintain the engine inventory.



NOTES

I. IDENTIFICATION OF ENGINE AND CREW CAPABILITIES AND LIMITATIONS

As an Engine Boss, what is the importance of knowing the capabilities and limitations of their:

How do the capabilities and limitations of your engine and assigned personnel apply to any tactical assignments you may receive?

A. Engine Capabilities and Limitations

Knowledge of engine's capability and limitations to complete an assignment.

1. Terrain considerations

2. Water capabilities

3. Maneuverability

4. Ability to get in and out (ingress/egress) of a given situation.

5. Engine suited to stationary vs. mobile attack.

6. Reliability - old vs. new

B. Engine Typing

C. Crew Capabilities

1. Will assignment exceed the experience and training level of the crew and/or supervisor (you) to safely complete the assignment?

2. Will the condition of your crew compromise safety?

3. Assess the qualifications and capabilities of any unfamiliar crew member(s).

   Pre-planned assignments are highly recommended. Determining responsibilities during suppression activities can lead to confusion.

NOTES

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D. Tactical Assignments

1. Be aware of situations that exceed engine and crew capability to safely complete an assignment. Ensure the following are applied to your situation:

2. Will the condition of other engines and their personnel that you work with compromise your safety?

The Engine Boss must communicate with adjacent resources to identify their capabilities and to coordinate their suppression efforts.

II. MAINTAINING ENGINE INVENTORY

A. Pre-Incident Inventory

1. Determine method for maintaining pre-incident engine inventory.

2. A written inventory should be maintained on your engine at all times.

3. If you have not established a method then do so.

B. Maintaining Inventory During Incident Operations

1. Inventory should be maintained and replenished on a daily basis if possible.

2. Utilize supervisor or the chain of command to replenish supplies on incident.

3. Attempt to maintain engine in a state of full readiness.

C. Utilization of Hose and Appliances

1. Engine hose and appliances should be utilized from first responding engine.

2. Maintain mobility of engines that don't need to be stripped of inventory.

3. Consider utilizing hose and appliances of first responding engine of agency with jurisdictional responsibility.

4. The key is to maintain mobility of as many engines as possible while still conducting suppression activities.

NOTES

NOTES

D. Demobilization/Post-Incident Inventory Re-supply

1. Utilizing a listing of pre-incident inventory.

2. Procure appropriate order to replenish at the home unit.

3. Always depart an incident ready for reassignment.

4. Post incident maintenance

III. DAILY ENGINE MAINTENANCE

REVIEW UNIT OBJECTIVES.

Engine Inventory, example

Category	Item Description	NFES #	Type 3, 4 & 5	Type 6
Fire Tools & Equip.	McLeod	0296	1	
	Combination Tool	0346	1	1
	Shovel	0171	3	2
	Pulaski	0146	3	2
	Backpack Pump	1149	3	2
	Fusees (case)	0105	1	½
	Foam, concentrate, Class A (5-gallon)	1145	1	1
	Chain Saw (and chaps)		1	1
	Chain Saw Tool Kit	0342	1	1
	Drip Torch	0241	2	1
	Portable Pump		*	*
Medical	First Aid Kit, 10-person	0068	1	1
	Burn Kit		1	1
	Body Fluids Barrier Kit	0640	1	1
General Supplies	Flashlight, general service	0069	1	1
	Chock Blocks		1	1
	Tow Chain or Cable	1856	1	1
	Jack, hydraulic (comply w/ GVW)		1	1
	Lug Wrench		1	1
	Pliers, fence		1	1
	Food (48-hour supply)	1842	1	1
	Rags	3309	*	*
	Rope/Cord (feet)		50	50
	Sheeting, plastic, 10' x 20'	1287	1	1
	Tape, Duct	0071	1	1
	Tape, filament (roll)	0222	2	2
	Water (gallon/person) minimum		2	2
	Bolt Cutters		1	1
	Toilet Paper (roll)	0142	*	*
	Cooler or Ice Chest	0557	*	*
	Hand Primer, Mark III	0145	*	*
	Hose Clamp	0046	2	1
	Gaskets (set)		1	1
	Pail, collapsible	0141	1	1
	Hose Reel Crank		*	*
Safety	Fire Extinguisher (5 lb)	2143	1	1
	Flagging, Hot Pink (roll)	0566	*	*

Engine Inventory, example, continued

Category	Item Description	NFES #	Type 3, 4 & 5	Type 6
	Flagging, yellow w/black stripes (roll)	0267	*	*
	Fuel safety can (OSHA, metal, 5-gallon)	1291	*	*
	Reflector Set		*	*
Vehicle & Pump Support	General Tool Kit (5180-00-177-7033/GSA)		1	1
	Oil, automotive, quart		4	2
	Oil, penetrating, can		1	1
	Oil, automatic transmission, quart		1	1
	Brake Fluid, pint		1	1
	Filter, gas		1	1
	Fan belts		1	1
	Spark plugs		1	1
	Hose, air compressor w / adapters		1	0
	Fuses (set)		1	1
	Tire Pressure Gauge		1	1
	Jumper Cables		1	1
	Battery Terminal Cleaner		*	*
	Tape, electrical, plastic	0619	1	1
	Tape, Teflon		1	1
Personal Gear (Extra Supply)	File, mill, bastard	0060	*	*
	Head Lamp	0713	1	1
	Hard Hat	0109	1	1
	Goggles	1024	2	2
	Gloves		*	*
	First Aid Kit, individual	0067	1	1
	Fire Shirt		*	*
	Fire Shelter w/ case & liner	0169	2	1
	Packsack	0744	2	1
	Batteries, headlamp (pkg)	0030	6	4
	Ear Plugs (pair)	1027	3	3
	Dust Mask	0131	6	4
Radio	Portable		1	1
	Mobile		1	1
	Batteries (for portable radio)		2	2
Hose	Booster (feet/reel)	1220	100	100
	Suction (length, 8' or 10')		2	2
	1" NPSH (feet)	0966	300	300
	1½" NH (feet)	0967	300	300
	¾" NH, garden (feet)	1016	300	300
	1½" NH, engine protection(feet)		20	20

Engine Inventory, example, continued

Category	Item Description	NFES #	Type 3, 4 & 5	Type 6
	1½" NH, refill (feet)		15	15
Nozzle	Forester, 1" NPSH	0024	3	2
	Adjustable, 1" NPSH	0138	4	2
	Adjustable, 1½" NH	0137	5	3
	Adjustable, ¾" NH	0136	4	2
	Foam, ¾" NH	0627	1	1
	Foam, 1½" NH	0628	1	1
	Mopup Wand	0720	2	1
	Tip, Mopup Wand	0735	4	2
	Tip, forester nozzle, fog	0903	*	*
	Tip, forester nozzle, straight stream	0638	*	*
Wye	1" NPSH, Two-Way, Gated	0259	2	1
	1½" NH, Two-Way, Gated	0231	4	2
	¾" NH w/ Ball Valve, Gated	0739	6	4
Adapter	1" NPSH-F to 1" NH-M	0003	*	*
	1" NH-F to 1" NPSH-M	0004	1	1
	1½" NPSH-F to 1½" NH-M	0007	1	1
	1½" NH-F to 1½" NPSH-M	0006	*	*
Increaser	¾" NH-F to 1" NPSH-M	2235	1	1
	1" NPSH-F to 1½" NH-M	0416	2	1
Coupling	1" NPSH, Double Female	0710	1	1
	1" NPSH, Double Male	0916	1	1
	1½" NH, Double Female	0857	2	2
	1½" NH, Double Male	0856	1	1
Reducer/ Adapter	1" NPSH-F to ¾" NH-M	0733	3	3
	1½" NH-F to 1" NPSH-M	0010	6	4
	2" NPSH-F to 1½" NH-M	0417	*	*
	2½" NPSH-F to 1½" NH-M	2229	*	*
Reducer	1½" NH-F to 1" NH-M	0009	1	1
	2.5" NH-F to 1½" NH-M	2230	1	1
Tee	1"NPSH-F x 1" NPSH-M x 1" NPSH-M, w/cap	2240	2	2
	1½" NH-F x 1½" NH-M x 1" NPSH-M w/cap	0731	2	2
	1½" NH-F x 1½" NH-M x 1" NPSH-M w/valve	0230	2	2
Valve	1½" NH-F, Automatic Check and Bleeder	0228	1	1
	¾" NH, Shut Off	0738	5	5
	1", Shut Off	1201	1	1
	1½", Shut Off	1207	1	1
	Foot, w/ strainer		1	1
Ejector	1" NPSH x 1½" NH x 1½" NH, Jet Refill	7429	*	*

Engine Inventory, example, continued

Category	Item Description	NFES #	Type 3, 4 & 5	Type 6
Wrench	Hydrant, adjustable, 8"	0688	1	1
	Spanner, 5", 1" to 1½" hose size	0234	4	1
	Spanner, 11", 1½" to 2½" hose size	0235	2	2
	Pipe, 14"	0934	1	1
	Pipe, 20"		1	1
Engine	*Fireline Handbook*	0065	1	1
	Belt Weather Kit	1050	1	1
	Binoculars		1	1
	Map Case w / maps		1	1
	Inventory List		1	1
	Standards For Fire and Aviation Operations		1	1
*No minimums – carried by engines as an option, within weight limitations				

Daily Checklist, example

Property #	**Engine #**	**License #**

	Su	Mo	Tu	We	Th	Fr	Sa
Walk around vehicle and check for damage							
Inspect tires for uneven wear/damage and proper inflation							
Check the undercarriage for damage and loose belts							
Check slack adjusters/ individual wheel brake drum							
Inspect battery for loose connections and corrosion							
Inspect air filter							
Check belts and hoses for tension and wear							
Check engine oil level							
Check coolant level							
Check power steering fluid level							
Check wiper fluid level and operation							
Check air compressor							
Check headlights, turn indicator, reverse, and overhead lights							
Check air brake system (leaks)							
Check low air pressure warning beeper							
Check automatic parking brake deployment							
Check horn operation							
Check proper radio operation							
Complete inventory check every Sunday or after any fire							
Wash/clean engine (every two weeks or after fire/field assignment)							
Check water level in tank							
Check valves for proper operation							
Check for PTO engagement/disengagement							
Check gauges							
Pressure check plumbing for leaks							
Check overboard discharge for all valves							
Check primer pump oil level							
Perform drafting operation							

Comments:	Needs:

DETAILED LESSON OUTLINE

NOTES

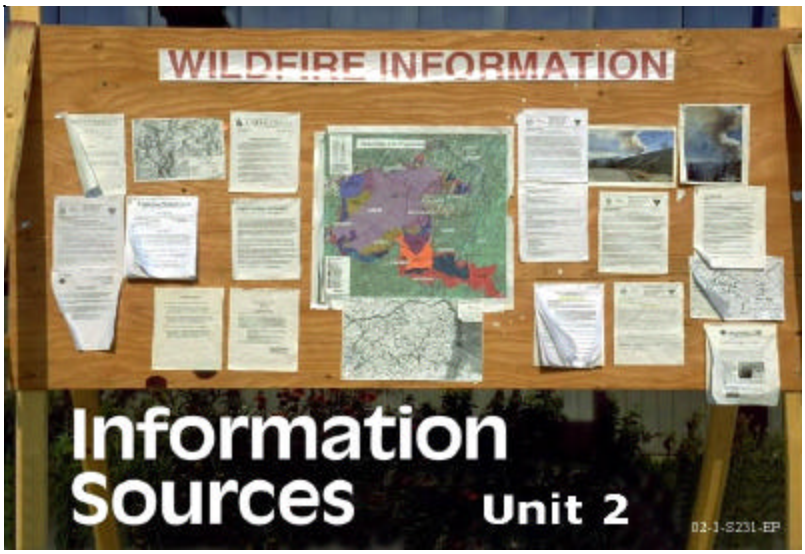
COURSE: Engine Boss (Single Resource), S-231

UNIT: 2 - Information Sources

OBJECTIVES: Upon completion of this unit, the student will be able to:

1. Identify sources of information needed to complete tactical assignment.

2. Describe the coordination required to accomplish tactical assignment.



I. INFORMATION SOURCES

The Engine Boss is responsible for gathering all the information necessary to accomplish their tactical assignment. Once a clear picture of the assignment is known the Engine Boss must then pass this information to their assigned personnel.

NOTES

The information sources include, but are not limited to:

II. BRIEFINGS

A. The Engine Boss' primary source of information is supervisor briefing.

Depending on the size complexity of the incident the Engine Boss may receive briefings from one or a combination of the following sources:

COMPLETE THE EXERCISE.

B. Supervisor Briefing—Essential Information

1. Situation

2. Mission/Execution

3. Communications

NOTES

4. Service/Support

5. Risk Management

Questions or Concerns?

6. Any special or additional items of equipment that assigned personnel must take to the line.

7. Any special equipment that you may have assigned to your operation:

8. Fueling requirements, availability and location.

NOTES

9. Maintenance requirements and how to obtain a mechanic if one is needed on the line.

10. An indication of engine crew work performance during past operational periods.

11. Whom to report to on the line.

C. Other Incident Personnel

Most information will come from the fireline supervisor. It is important to maintain communication with all fireline personnel to gather the most current and accurate information.

The Engine Boss should also inquire of other incident personnel what their experience is with the current incident, such as:

1. Size of fire

2. Complexity of fire

3. Phase of fire

4. Attack methods that have been used. Methods that have been successful.

5. Fire behavior

6. Equipment

NOTES

D. Subordinate Briefing

After the Engine Boss has determined their assignment, assigned personnel must be informed of their duties.

Clarify the chain of command and give the subordinates a clear idea of how their efforts fit into the suppression effort.

When briefing your assigned personnel, it is important to include:

1. Any and all information which allows them to safely and efficiently accomplish their assigned tasks.

2. Take crew to morning briefing if applicable.

3. Discuss the chain of command.

4. Discuss safety issues:

5. Work assignment:

   a. Other engines

   b. Hand crews

   c. Specialty crews

NOTES

6. What support is necessary?

   a. Water tenders

   b. Retardant base

   c. Routine or emergency maintenance

7. Communications to be used:

   a. Engine to engine and/or adjoining forces

   b. Engine to overhead (using chain of command)

   c. Engine to aircraft (using chain of command)

III. COORDINATION

It is essential that all fire suppression activities be coordinated and that communications are established and maintained.

A. Establishing and Maintaining Communications

What is the importance of establishing and maintaining communications?

1. One of the essential components of LCES.

NOTES

2. Any changes in fire behavior, activity can be monitored.

3. Any activities by adjacent forces, division/ groups that may compromise safety can be monitored.

B. Coordination With Adjoining Forces

Why is coordination with adjoining forces important during fireline activities?

What are methods for implementation?

1. May be required to support adjacent forces, division/groups.

2. May provide support to other operations on the fire.

REVIEW UNIT OBJECTIVES.

S-231 Unit 2
EXERCISE

You are all Engine Bosses. This is your first operational period.

Prepare a response for the following question:

What kind of information would you want from your fireline supervisor?

DETAILED LESSON OUTLINE

NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 3 - Fire Sizeup Considerations

OBJECTIVES: Upon completion of this unit, the student will be able to:

1. Describe the sizeup elements in a fire situation.

2. Identify the four fuel groups and describe expected fire behavior in each.

3. Determine the tactics to be used after sizeup occurs.

NOTES

I. SIZEUP ELEMENTS

The Engine Boss, when given an assignment by their supervisor, must decide which method of attack must be utilized to effectively complete the assignment.

There are three methods of attack; direct, parallel, and indirect. Various tactics can be used in each of these methods and these will be discussed in Tactics, Unit 4.

To ensure safety, firefighters must be familiar with the factors needed to effectively size up the fire. This will enable you to select the appropriate tactics with the available resources.

En route to a fire think about your knowledge of the fire area. The following must be observed and considered:

A. Fuels and terrain

B. Fire behavior potential

C. Current and predicted weather

D. Smoke column

E. Access roads

F. Possible water sources

G. Jurisdiction

H. Fire history of the area

I. Parking

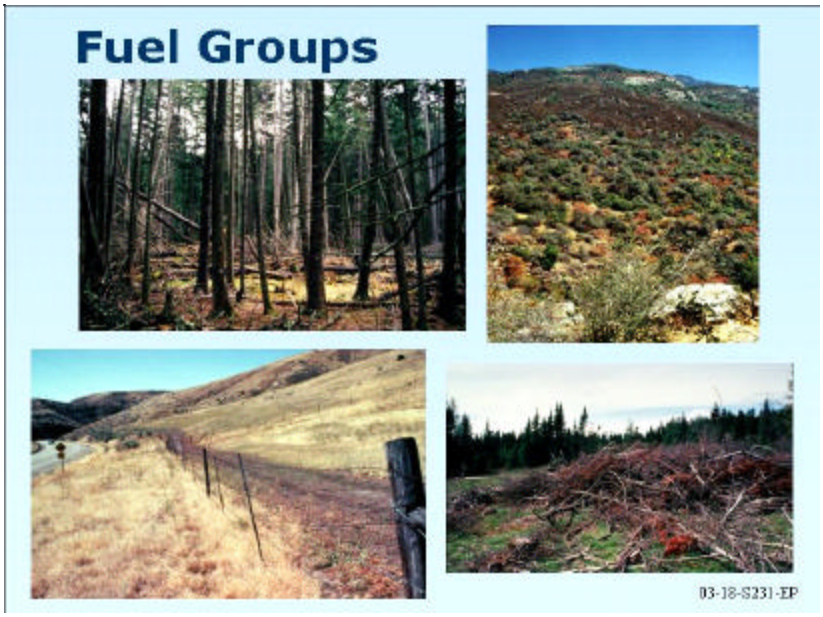
J. Observe vehicles coming and going.

NOTES

II. FUEL GROUPS AND EXPECTED FIRE BEHAVIOR

Fuel groups - Fuels vary in type from one area of the country to another and within the same area. Fuels can be classified into four major groups:

COMPLETE EXERCISE 1.



A. Grass Group - Found in most areas, but more dominant as a fuel in desert and range areas. It can become prevalent after a prescribed fire in forested areas.

1.

2.

NOTES

3.

4.

5.

6.

B. Shrub Group - Found throughout most geographical areas. Some dangerous shrub fuels are palmetto/gallberry in the Southeast, sagebrush in the Great Basin, and chaparral in the Southwest and West.

1.

2.

3.

4.

5.

6.

C. Timber Litter Group - Most dominant in mountainous topography, especially in the Northwest.

1.

2.

3.

4.

5.

6.

D. Logging Slash Group - Debris left after logging, pruning, thinning, or shrub cutting. It may include logs, chunks, bark, branches, stumps, and broken understory trees or shrubs.

1.

2.

3.

NOTES

NOTES

4.

5.

6.

III. ARRIVAL ON THE FIRE SCENE

A. Correct tactical decisions always provide for safety first:

B. Decisions to be made:

COMPLETE EXERCISE 2.

C. Other factors that affect decision making:

D. Relay the information:

COMPLETE EXERCISE 3.

NOTES

REVIEW UNIT OBJECTIVES.

Unit 3
Exercise 1

Each group will be assigned on of the four fuel groups.

Example:

Group 1 grass group
Group 2 shrub group
Group 3 timber litter group
Group 4 logging slash group

On a flipchart identify and list the following for your assigned fuel group:

1. Rate of spread
2. Reaction to water
3. Mopup time required
4. Duration of heat and flame
5. Best engine type utilized
6. Best method of attack (indirect, direct, or parallel).
7. Provide examples of areas of the country where this fuel group is a concern.

Unit 3
Exercise 2

Each group will be assigned on of the following elements of LCES.

Example:

Group 1 Lookouts
Group 2 Communications
Group 3 Escape routes
Group 4 Safety zones

For each topic identify:

1. How does this apply to them as an Engine Boss?

2. What are important considerations?

3. Provide an example of where they may have observed a violation of this principle.

4. What actions they would take to correct this in the future?

Unit 3
Exercise 3

Each group will be assigned one of the following four topics:

1. Fuels

2. Topography

3. Weather

4. Fire behavior

For your assigned topic, identify and list:

1. Elements that need to be considered when sizing up your assigned topic.

2. How these factors affect your decision making during engine operations.

3. Whom do you communicate the sizeup to? What other factors (human) could affect your decision-making process during engine operations?

Sizeup Considerations for the Following Key Factors:

FUELS:

-
-
-
-
-
-
-
-

TOPOGRAPHY:

-
-
-
-
-
-
-
-
-

WEATHER:

-
-
-
-
-
-

FIRE BEHAVIOR:

-
-
-
-
-
-
-
-

OTHER SIZEUP FACTORS:

-
-
-

DETAILED LESSON OUTLINE

NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 4 - Tactics

OBJECTIVES: Upon completion of this unit, the student will be able to:

1. Describe the advantages and disadvantages of direct, parallel, and indirect attack in a fire situation.

2. Develop alternative plans based upon equipment failures and/or personnel problems.

3. Determine appropriate tactics to be used based upon changes in fire behavior, fire weather, and terrain.

NOTES

I. METHODS OF ATTACK

There are three different attack methods used on wildland fires; direct, parallel, and indirect.

A. Direct Attack

When constructing a fireline directly on the fire perimeter, keep one foot (or tire) in the black.

1. Advantages of the direct attack method are:

2. Disadvantages to the direct attack method are:

3. Direct attack tactics include:

   - Pincer -
   - Tandem -
   - Envelopment -

Critical areas are attacked first using the hotspotting technique, then the engines start moving towards each other.

If this method is used, timing must be well coordinated. If not, a section of line may be overlooked, and the fire may escape, outflanking firefighters.

This technique is commonly associated with structure protection in the wildland/urban interface.

NOTES

B. Parallel Attack

Constructing a fireline parallel to, but further from, the fire perimeter than in direct attack, due to fire intensity.

1. Advantages of parallel attack.

2. Disadvantages of parallel attack.

C. Indirect Attack

Constructing a fireline some distance from the fire perimeter. Should use a barrier (natural or constructed) in the fireline construction, if available. Intervening strip is wide and fuels are burned out. Allows for choice of timing for burning out.

1. The advantages of the indirect attack are:

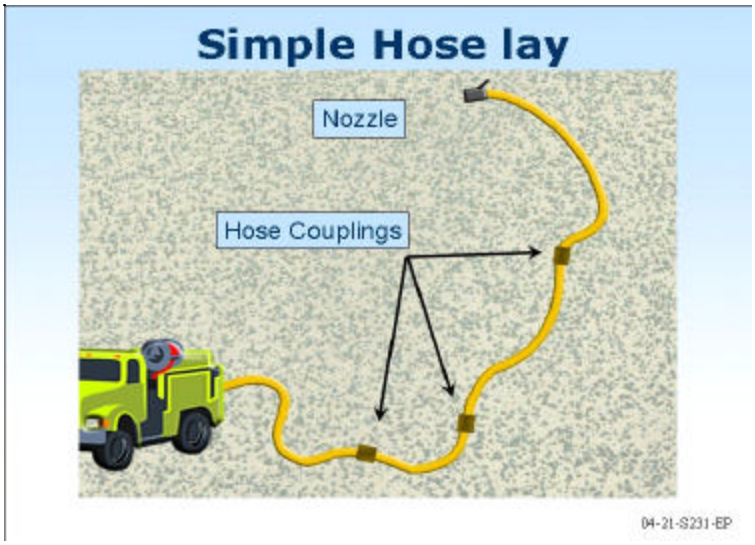
NOTES

2. The disadvantages of the indirect attack method are:

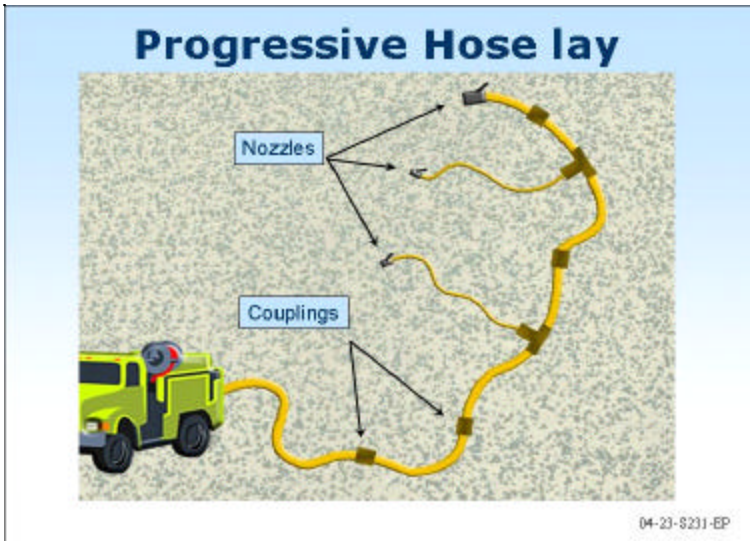
II. DELIVERY OF ATTACK METHODS

A. Stationary

1. Simple hose lay:



2. Progressive hose lay:



B. Mobile attack

1. Also referred to as:

2. What are situations where mobile attack with engines should not be used?

NOTES

III. ENSURE PERSONNEL SAFETY

- Fight fire in fuels consistent with engine capabilities.
- Use direct attack when possible.
- Attack flank with greatest potential for escape.
- Burn out unburned fuels.
- Use extreme caution during frontal assaults.
- Avoid fire path of least resistance (chimneys, chutes and saddles.)
- Recognize topography hazards.
- When preserving area of origin, continue to consider firefighter safety.
- Be aware of environmental factors.
- Recognize education and experience.

NOTES

IV. ALTERNATIVES TO YOUR PRIMARY PLAN BASED ON THE POSSIBILITY OF BREAKDOWN OR EQUIPMENT FAILURE

When involved in ongoing wildland fire operation activities:

What methods do you use to ensure that your engine and equipment are available and operational for your tactical assignment?

In the event of an engine or equipment breakdown what are your responsibilities?

A. Planning

1. Plan ahead so a particular area can be covered by another resource or engine in the event of a breakdown or failure.

2. Work with backup help whenever engine or equipment breakdowns will jeopardize the safety of you and your crew.

B. Alternate Methods To Accomplish Assigned Tasks

1. Use of hand tools

2. Use of backpack pumps

3. Use of portable pumps

4. Work with other engine crews to accomplish assigned tasks.

5. Request assistance to accomplish assigned tasks.

C. Responsibilities of the Engine Boss in the Event of Equipment Breakdown

1. Keep your supervisor informed.

2. Reevaluate safety considerations.

3. Keep assigned personnel informed of any changes in the tactical assignment.

4. Keep adjacent forces informed.

COMPLETE EXERCISE 1.

COMPLETE EXERCISE 2.

REVIEW UNIT OBJECTIVES.

NOTES

Unit 4—Exercise 1

Fuel Group: Hardwood Timber Litter

Date: September 24, 1600 hours

Weather: Winds are light and variable 5-7 mph. RH is 28%

Fire Behavior: Flame lengths are 5 ft. at the head of the fire.

Topography: Rolling terrain, negotiable by type 5 engines.

Resources: 2 Type 5 engines including yours.

Scenario: You are working an isolated finger of a large fire in tandem with another type 5 engine. The engine that you have been working with is currently refilling their water supply and not on scene. Your engine quits.

Given the situation:

1. What contingency plan did you have in place prior to initiating fire suppression activities?

2. What do you do?

Unit 4—Exercise 2

Scenario 1

Fuel Group: Grass

Weather: Winds out of the southeast 5-10 mph.

Fire Behavior: Flame length approximately 5 ft. at the head of the fire. Fire is moving in a northwest direction.

Topography: Relatively flat terrain.

Resources: You have arrived on scene with your engine and crew and will be working with another engine that is on scene.

Scenario: The fire is active at the head and running to the northwest. All available weather indicators appear that they will remain constant. The fire is approximately 10-15 acres. Using the available information and any other resources available, how will you coordinate with the other engine boss to best deploy your resources? Illustrate on the map and determine the tactics used.

Provide a solution for this scenario based on the following:

1. Best method of attack.

2. Placement of resources.

3. Advantages, disadvantages, safety concerns, and considerations.

Unit 4—Exercise 2

Scenario 2

Fuel Group: Grass with pockets of brush

Weather: Winds are variable with gusts to 15-20 mph.

Fire Behavior: Flame lengths are 6-8 ft. on an uneven edge caused by pockets of brush. Flame lengths at the heads of the fire are 12-15 ft. caused by the predominant winds.

Topography: Rolling terrain, negotiable by lighter engines.

Resources: 3 Type 6 engines including yours.

Scenario: The fire is currently 15-20 acres. With the information given, how would you coordinate with other resources to best deploy available resources?

Provide a solution for this scenario based on the following:

1. Best method of attack.

2. Placement of resources.

3. Advantages, disadvantages, safety concerns, and considerations.

An engine crewmember has been stung by a bee and has gone into anaphylactic shock.

1. What are your responsibilities as an Engine Boss?

2. Whom would you contact?

3. How would this change your tactics?

Unit 4—Exercise 2

Scenario 3

Fuel Group: Grass and shrub.

Weather: Winds are light and variable from the south/southwest.

Fire Behavior: Flame lengths are approximately 4 feet on the flanks and 6 feet at the head of the fire. The fire is active at the head of the fire and on the flanks. The fire is moving actively through the grasses but not running at an extreme rate.

Topography: Mild rolling terrain.

Resources: You arrive on scene with your Type 5 engine and crew. Also arriving at the same time are four other engines and crews, two Type 4 engines and two Type 6 engines. These engines are multi-agency including a volunteer fire department.

Scenario: The fire is currently 15-20 acres. The mild and rolling terrain is accessible by engines. The multiple spread on the flanks and head of the fire is causing immediate threats to the structures. How would you coordinate with other resources to best deploy the resources on scene.

Provide a solution for this scenario based on the following:

1. Best method of attack.

2. Placement of resources.

3. Advantages, disadvantages, safety concerns, and considerations.

Scenario 3A:
The fire continues on past the structures towards a road. Fuels and fire behavior are the same. How will you change your strategy?

Unit 4—Exercise 2

Scenario 4

Fuel Group: Grasses and areas of timber litter.

Weather: Winds are 10-15 mph out of the southwest and erratic.

Fire Behavior: Fire is wind driven at the head and influenced by topography on the west and northwest sides. Some minor spotting is being caused by the erratic winds.

Topography: Terrain is steep on the west and northwest sides and rolling grass and sagebrush on the south and southeast sides.

Resources: 3 Type 4 engines including yours are on scene.

Scenario: The fire is currently 10-15 acres. Fire is accessible by engines on the south flank. The west and northwest flanks are burning into steep terrain dominated by timber that will limit engine access where the terrain becomes steeper. How would you coordinate with the other resources to best deploy the available resources with the given information?

Provide a solution for this scenario based on the following:

1. Best method of attack.

2. Placement of resources.

3. Advantages, disadvantages, safety concerns, and considerations.

Road
N
Scenario #1

Road
Scenario #2
N

Scenario #3
Road
Road
Road
Road
N

River
Natural Barrier
Road
Road
Road
Road
N
Scenario #3a

Road
Scenario #4
N

DETAILED LESSON OUTLINE

NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 5 - Wildland/Urban Interface

OBJECTIVES: Upon completion of this unit, the student will be able to:

1. Identify wildland/urban interface characteristics that must be monitored.

2. Describe safety hazards commonly encountered in wildland/urban interface fires.

NOTES

I. INTRODUCTION

With the increased firefighting activities in the urban interface, wildland firefighters must become aware of a new fire environment.

Structure defense is an unfamiliar role to most wildland firefighters.

Firefighters tend to place themselves at greater risk when battling wildland fires in an effort to save homes.

Remember: Safety of life is most important and must be adhered to by the use of the Standard Firefighting Orders, Watch Out Situations, and the use of LCES. The ability to access escape routes and safety zones is of the utmost importance.

Structures exposed to wildland fire in the urban interface can and should be considered as another fuel type. Sizeup and tactics should be based upon fuels,weather and topography, just as those criteria would be applied to a wildland fire.

II. WILDLAND/URBAN INTERFACE CONSIDERATIONS

Engine crews are commonly utilized to protect structures during wildfire incidents.

Crews that are not familiar with operations in the wildland/urban interface should not be assigned structural protection duties.

A. Triage

Sorting and setting priorities for structures requiring protection from wildfires.

B. Five Factors That Affect Triage Decisions:

1.

2.

3.

4.

5.

C. Triage Categories:

1.

2.

3.

NOTES

NOTES

D. When It Is Time To Withdraw:

No simple rule will tell you when to try, or at what time to abandon, a structure defense effort.

Listed below are some factors or conditions worth noting.

If any of these apply, then the attempt to save that structure deserves careful consideration before continuing.

1. You cannot safely remain at the structure and/or your escape route could become unusable. Your safety is in jeopardy.

2. The fire is making significant runs (not just isolated flare-ups) in the standing live fuels; e.g., brush or tree crowns, and the structure is within one or two flame lengths of the fuels.

3. Spot fires are igniting around the structure or on the roof and beginning to grow faster than you can put them out.

4. Your water supply will not allow you to continue firefighting until the threat subsides.

5. The roof is more than 1/4 involved, in windy conditions, and other structures are threatened or involved.

6. Interior rooms are involved and windows are broken, in windy conditions, and other structures are threatened or involved.

III. WATCH OUT SITUATIONS FOR THE WILDLAND/ URBAN INTERFACE

NOTES

A. Wildland/Urban Watch Out #1

Poor Access and Narrow One-Way Roads.

There are numerous problems associated with the use of roads in the wildland/urban interface:

1. Road bed material

2. Road width

3. Position on slope

4. Fuel Canopy

Beware of ladder fuels along roads:

Fuel accumulations and concentrations can jeopardize your safety by blocking your egress. Flame lengths can be high, indicating an increasing fireline intensity.

NOTES

5. Adjacent fuels

Beware of your fire environment such as:

When burning, these fuels could block you escape route. However, they may serve to your advantage for burning out along roadways to secure a safety zone.

6. Roads in the wildland/urban interface often:

B. Wildland/Urban Watch Out #2

Bridge Load Limits

1. Weight limits

2. Construction of bridge

3. Bridge width

C. Wildland/Urban Watch Out #3

NOTES

Wooden Construction and Wood Shake Roofs

These types of structures are easy targets for firebrands and burning fuel adjacent to structures. Most wooden structures are not treated with flame-resistant compounds.

The fireline intensity is usually high, therefore radiant heat preheats the structure until it reaches combustion temperatures.

Openings in buildings provide entry points for fire and fire brands regardless of construction materials.

1. Check eaves, roof, roof vents, and decks

2. Remove any combustible furniture

3. Do not enter the interior of any structure, unless properly trained.

4. Dangerous structure fire situations:

   The following characteristics may indicate a backdraft or smoke explosion condition. Remain a safe distance away from these structures.

   - Black or dark smoke leaving the building in puffs.

   - Dark smoke stained windows.

NOTES

- Closed structure that appears to have interior fire with little or no ventilation.

- Black smoke pushing out of low openings.

D. Wildland/Urban Watch Out #4

Inadequate Water Supply

1. The amount of water available is always a critical factor.

2. The flow from area hydrants will probably stop or will have severely reduced pressures due to the great demand placed on them.

3. DO NOT rely on hydrants as your sole water source.

4. Know your usable water tank capacity and pump capability.

5. Do not waste water.

6. DO NOT pass up an opportunity to "top off" your water tank (garden hose).

7. ALWAYS keep the last ____ gallons of water.

E. Wildland/Urban Watch Out #5

NOTES

Natural Fuels 30 Feet or Closer to Structures

Fuels that are next to or beneath the structure (downslope) create a ladder. Closed canopy can have ladder fuels. This creates a situation where structure survivability is low and presents a high risk to firefighter safety.

1. No safety zone for structure or personnel.

2. Pre-position engine(s) and/or vehicles(s).

3. A common practice by residents is to stack flammables next to structures.

4. Structure(s) in the path of least resistance.

5. Fire could make several runs at any structure.

F. Wildland/Urban Watch Out #6

Structures in Chimneys, Box Canyons, Narrow Canyons, or on Steep Slopes (30% or greater).

Home sites with a view are structures that have the lowest survivability and the highest safety risk to firefighting personnel.

1. Structures are a path of least resistance for heat and smoke.

NOTES

2. Box or narrow canyons:

   - Wind direction
   - Radiant heat transfer

3. Steep slopes in flashy fuels:

   - Accelerated rate of spread
   - Spot fires
   - Burning materials rolling downhill

A no win situation. Because of the nature of topography and the potential for erratic fire behavior, fire suppression personnel are put in multiple Watch Out Situations. The high safety risk and chances for firefighter entrapment creates a lack of defensible space.

4. Personnel safety concerns:

   - Chances of entrapment
   - Departure (egress)
   - High rate of spread
   - Gusty erratic winds
   - Safety zones
   - Fire can make several runs

G. Wildland/Urban Watch Out #7

NOTES

Extreme Fire Behavior

A fire that burns with an intensity far out of proportion to apparent burning conditions. It will multiply its rate of energy output many times in a short period of time.

These fires have been responsible for major loss of life and property within the wildland/urban interface.

Extreme fire behavior can exist under the following conditions:

1. Fuels are dry and plentiful

2. The atmosphere is either unstable or has been unstable for some hours, and possibly days, prior to the fire.

3. The speed of the free air usually is greater than 18 miles per hour, at an elevation equal to, or not much above, the elevation of the fire.

   Note: A few dangerous and erratic fires have occurred when the wind speed was not especially high.

4. Some effects of extreme fire behavior are:

   - Spotting

   - Fire whirlwinds

NOTES

5. The extreme fire behavior will create a complex fire situation. Factors that create safety hazards and limit the effectiveness of firefighting resources are:

   - Safe paths of departure may be in jeopardy if conditions worsen.
   - Risk of being flanked
   - Use of air attack becomes unlikely
   - Retardant becomes ineffective
   - Peak burning conditions may not have arrived yet.

   Keep mobile and flexible in your firefighting efforts. You should not commit yourself or other resources to become fixed at a single water source. Do not allow other vehicles to block your escape routes.

H. Wildland/Urban Watch Out #8

Strong Winds

Mostly a tactical problem to firefighting resources.

1. Causes fire to increase rate of spread.

   - Head and flanks become too active.
   - Could cause all levels of the fuel bed to become active, e.g., ground, aerial, canopy.
   - Unburned islands of fuel will remain.

2. The angle of the flame in relation to fuel is closer.

3. Velocity supplies oxygen to fire; carries sparks and burning fuel ahead of fire to start spot fires (spotting).

4. Wind driven fires have minimal backing spread rates.

5. Wind driven fires have an elliptical shape with a narrow head and often develop fingers. Complexity increases when the fire develops two heads or more.

NOTES

I. Wildland/Urban Watch Out #9

Evacuation of Public

The basic reason to evacuate:

To guarantee residents a safe and orderly egress from a fire threatened area, prior to the arrival of the fire front. This allows fire personnel to concentrate on fire operations and personal safety.

Considerations:

1. Evacuation is controversial.

2. During large fire scenarios with a command structure:

   - Contingency plans

   - Incident managment team briefings

NOTES

3. During evacuations remaining law enforcement personnel may lack the training and personal protective equipment for firefighting.

   - Brief law enforcement personnel
   - Do not place law enforcement personnel in extreme fire situations.

IV. ADDITIONAL WILDLAND/URBAN WATCH OUTS

A. Working Around Power Lines

1. Downed conductor (line) on vehicle:

   - DON'T leave vehicle until power company arrives.
   - If the vehicle is on fire or fire is near, jump clear.
   - DON'T hang on: keep feet together and bunny hop away.

2. Beware of water or liquids pooled or running along the surface. Liquids are good conductors.

3. Use extreme caution when working around chain link or other metal fences. Downed lines can charge an entire section of fence line.

4. DON'T:

- Operate heavy equipment under power lines.
- Use power line right-of-way for a drop point.
- Drive with long antennas under power lines.
- Fuel vehicles under power lines.
- "Spot" or park near pole mounted transformers.
- Go near or move downed lines.
- Squirt foam or water on power lines.
- Stand or work in dense smoke near power lines.

B. Petroleum or Propane Tanks are Present

1. Many rural home sites have liquefied petroleum gas (LPG) for heating.

2. Check all storage tanks for LPG and check for 30 foot clearance of vegetation around storage tanks. Check tanks for physical damage to the tank; damage could cause the tanks to explode when heated.

3. Check outbuildings, barns for flammable liquid storage.

NOTES

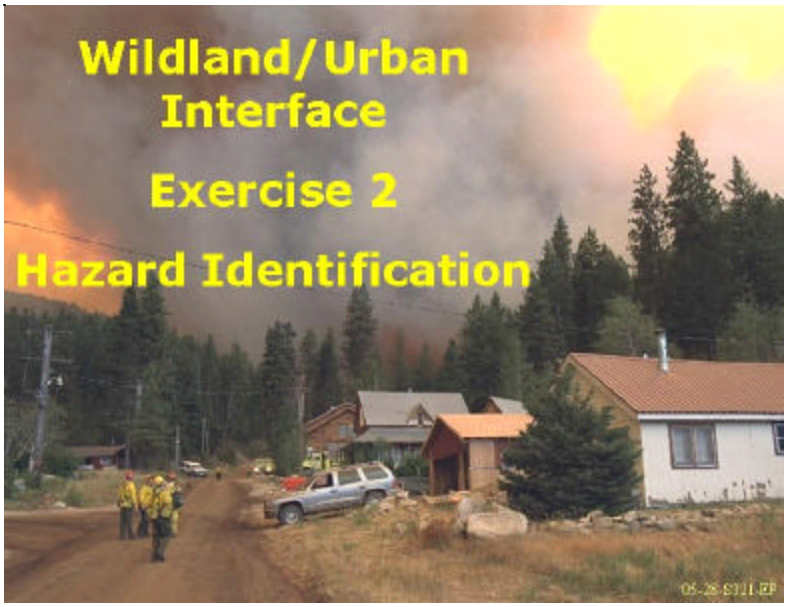
NOTES

4. Identify and mark all hazards with flagging or other warning devices. Post a lookout.

5. Keep your supervisor informed of hazards.

C. Out Buildings

Could contain hazardous materials, e.g., meth lab.



V. SUMMARY

Structure Defense and Safety of Personnel and Equipment:

A. Consider the orientation and the length of the fire front as it moves toward the structure.

B. Try to estimate the length of time an engine will be committed at one location.

C. Consider access/egress and escape routes/ safety zones.

D. The vulnerability of a structure depends on the fire intensity and on the placement and construction of the structure itself.

E. Building openings provide entry points for fire and fire brands.

F. After assessing the fire you should know:

- The time before the fire front arrives.
- Distribution and number of structures
- Vulnerbility of structures to be protected.
- ETA of resources committed to the site.
- Access and escape routes
- Suppression and defense tactics

G. Ensure adequate communications are established and maintained with all agencies involved. (LCES)

H. Have a command system, with a group supervisor or incident commander.

I. If resources are mixed, it may be best to place wildland engines in those assignments requiring the most involvement with wildland fire such as: perimeter positions, firing operations, etc. Do not position your engine where it might get stuck.

NOTES

NOTES

J. Where water tenders are the main water supply and when refill times are not extreme, it will take two tenders to supply enough water for one or two active strike teams.

K. Think about evacuation if necessary.

L. Follow your Risk Management Process, Structure Assessment Checklist, Structure Protection Checklist, LCES Checklist, etc.

M. *Safety is of primary importance*, life number one, property number two.

REVIEW UNIT OBJECTIVES.

DETAILED LESSON OUTLINE

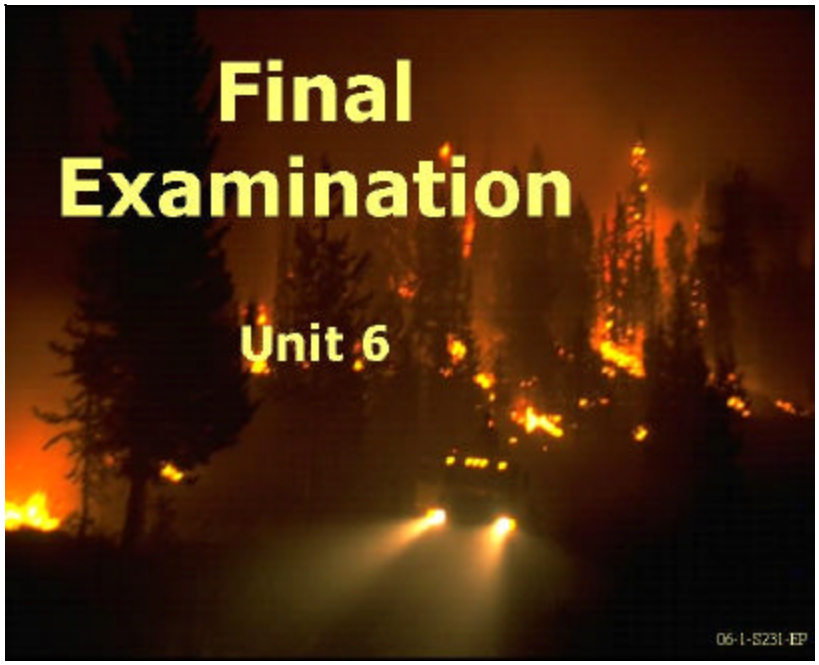
NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 6 - Final Examination

OBJECTIVES: Upon completion of this unit, the student will be able to:

Obtain 70% or higher on the final examination to pass the course.



One hour is allowed to complete the final examination. Feel free to use the Fireline Handbook, the Incident Response Pocket Guide, Wildland Fire Suppression Tactics Reference Guide, and any hand written notes. For completion of the final examination, exercise solution sheets will not be allowed.

There are 100 possible points on the final examination. If an answer is reasonable, credit will be given. In cases where a question is unclear, justification written beside the answer may also be given credit at the discretion of the instructor.

DETAILED LESSON OUTLINE

NOTES

COURSE: Engine Boss (Single Resource), S-231

UNIT: 7 - Field Exercise

OBJECTIVES: Upon completion of this unit, the student will be able to:

1. Obtain essential information from the Incident Commander and brief crewmembers and adjoining forces.

2. Maintain LCES and standard safety procedures.

3. Participate in an After Action Review.

I. FIELD EXERCISE

A. First engine on scene assumes role of I.C.

B. I.C. chooses appropriate tactic; manages incident safely by following standard operating guidelines, e.g., Fire Orders, Watch Out Situations, Risk Management Process, LCES.

C. Must recognize/identify the difference between safety zones/deployment zones.

D. Engine Bosses will perform an after action review.

II. TACTICAL DECISION GAMES

This optional exercise is to enable the students to have hands-on experience with decision-making in a real life scenario in the classroom setting. The following pages contain a sample scenario. The instructors may insert their own tactical decision game scenario.

NOTES

SCENARIO: Your position is Engine Boss on a Type 5 engine (2WD), and you are currently responding to a fire report on your district. It is the beginning of the fire season and you have only been with your crewmembers for 2 weeks. One person has one full season of fire experience, and the other is brand new. The initial report indicates a fire in grass and brush, on flat terrain, and with no estimate of acreage. The weather forecast for the day calls for temperature in the high 80's, relative humidity in the 20's, winds to 15 mph. out of the southwest, and a Haines Index of 4. You were dispatched @ 1300.

Your engine is the first ground resource to reach the fire.

As you arrive at the fire location you notice:

- You did not see any accessible water sources on the way to the fire.
- Fire is 10-15 acres, active at the head and running to the northeast. The flanks show only moderate activity.
- Wind is out of the southwest 10-15mph, and indicators appear it will remain constant.
- Terrain at the origin is relatively flat, but turns into rolling hills and mountainous terrain with heavier fuel (brush and timber) to the north.
- The local fire operations specialist (FOS) has been dispatched as Incident Commander (IC), but informs dispatch he is 20 minutes away, on the other side of the district.
- You can see no structures in the immediate area that appear to be threatened.
- Another engine (Type 6 4X4) arrived on scene about the same time you did.
- A type 5 engine arrives 1/4 hour after you did.

Given this information the chosen Engine Boss from each group needs to:

- Describe who to coordinate with, what questions to ask, and which decisions are the immediate priorities.
- Determine the best method of attack and where to place resources.
- Describe your contingency planning process.

NOTES

2. Time - 1500

Scenario: You have secured line on the left flank with two other engines as far as you could drive into the hills. Your engine and another Type 5 have started a hose lay up the hill, and the Type 6 engine is patrolling the line looking for slopovers and spots. Three other engines have arrived and are working the left flank. The IC calls to inform you that a strike team of contract engines coming in shortly to take over your section of line. He would like you and the other two engines you're with to move to another part of the fire and assist with structure protection. (At this point, the IC is using you as the contact point for the three engines). The fire has burned toward the northeast from Banks Rd. into the mountains, and is threatening a small group of cabins. The IC is currently with the assistant fire management officer (AFMO) and line officer, discussing staffing and tactics, but will be on the way to the cabin site as soon as possible. There is a resource advisor presently at the cabin site coordinating the situation.

NOTES

Your engine is having trouble idling and quits running.

The wind has picked up with gusts of 20 mph, and your last weather reading indicated a temperature of 91 degrees Fahrenheit, and an relative humidity of 18%.

- Given this situation, list what other information you would want to have before proceeding with the order.
- Are there any other communication and coordination issues that need to be solved?
- Are there any changes in your contingency planning?
- How will you brief your crew?

3. Time - 1530

Scenario: You finally get your engine started and it seems to be running OK. The air cleaner was very dirty. The strike team of contract engines has arrived and you depart for the cabin site after you complete a thorough transition briefing that the IC strongly recommended. You are beginning to feel stressed by the delay in your departure. As your engine arrives in the cabin area you observe the following:

- The cabins are located in a forested area with some dense undergrowth. You do notice some open, green meadows in the area.
- Roads between various cabins are narrow and winding.
- There are 3 or 4 rural volunteer engines of different types scattered around different cabins.
- The resource advisor appears to have little or no training and experience in wildland fire, and is busy trying to contact the local residents to get them to leave the area. A law enforcement officer is also in the area assisting in evacuations. He tells you he believes there are 15 cabins in the group.

- The IC has been delayed as well, and is still 15 minutes from arriving. He believes the fire is still 1/2 mile away burning toward the cabin site. You only see a large column of smoke and the wind is blowing it in your direction.
  - Do you have enough information to safely take on this assignment? If not, what are some other sources you could inquire or refer to?
  - What communication and coordination issues need to be resolved?
  - How would you brief your crew
  - What new contingency issues have arisen?

NOTES

4. Time - 1630

Scenario: After scouting the area and triaging several cabins, you and the other type 4 engine find one with good defensible space, good parking spot and a water source. The water source is a well, and the cabin owner (who does not want to leave) tells you it is reliable. The IC has arrived in the area, but you have not talked to him face to face yet. The fire is getting closer to the cabin site and the fire intensity is high with short range spotting. Air attack and a type one air tanker are working putting in retardant drops in the area. There is a Type 3 helicopter working in the area doing bucket work. Over the radio, you understand that another heavy air tanker is in route.

NOTES

- If your engine stays at this cabin site to protect it what other major concerns do you have other than the ones stated?
  - What strategy and tactics would you employ to defend the structures?
  - Describe your risk analysis process.
  - If you decide not to defend any of the cabins what procedures would you follow?
  - Describe your risk analysis process.
  - What new contingency issues have surfaced for both possibilities?

5.

Scenario: You decide to stay and defend the cabin site. The owner of the cabin is still there. You feel you can save the structures and maintain LCES. The IC decides that the conditions are too dangerous overall and orders: " All units in the area of Banks Cabin Tract pull out. Proceed back to the main road and meet at the rest area at Mile Marker 117."

What is your response???