

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers



## Instructors Guide

**USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers**

**Module 1: Introduction to Saw Operations**

---

*This page intentionally left blank.*

**USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers**

**Module 1: Introduction to Saw Operations**

---

**Table of Contents**

About This Course ..... vi  
    Course Outline..... vi  
    Purpose of Course ..... vii  
    Course Goal ..... vii  
About this Instructors Guide ..... vii  
    Instructors Checklist ..... viii  
Module 1: Introduction to Saw Operations..... 1  
    Welcome and Introduction..... 1  
    Introduction ..... 1  
        Introductions ..... 1  
        Housekeeping ..... 2  
        Why This Training is Important..... 2  
        Course Outline ..... 3  
        Module Objectives..... 3  
        Pework Review ..... 4  
    Safety ..... 5  
        Personal Protective Equipment: Nonfire ..... 5  
        Personal Protective Equipment: Fire ..... 7  
        Ensure Proper Fit ..... 8  
        First Aid Kit..... 10  
    Work Area Safety..... 11  
        Video: Tree Hazards and Target Avoidance ..... 11  
        A Systematic Approach to Work Area Safety ..... 11  
        The Outside-In Approach..... 12  
        The Big Picture ..... 12  
    Human Factors ..... 14  
        What are Human Factors? ..... 14  
        Developing Thinking Sawyers ..... 14  
        Video: Human Factors and the Thinking Sawyer ..... 15

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

Video: How Thinking Sawyers Recover .....	15
Risk Management.....	16
What is Risk Management? .....	16
OHLEC: The Five-Step Size-Up .....	17
OHLEC: Objective .....	17
OHLEC: Hazards .....	18
OHLEC: Leans/Binds.....	19
OHLEC: Escape Plan .....	20
Escape Paths .....	20
OHLEC Cut Plan .....	21
Operational Complexity.....	22
Operational Complexity Chart .....	22
Putting It All Together .....	23
Knowledge Check .....	23
Summary .....	23
Questions .....	24

**USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers**  
Module 1: Introduction to Saw Operations

---

*This page intentionally left blank.*

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

### About This Course

As an instructor, you will help train U.S. Department of Agriculture (USDA), Forest Service employees and volunteers who have applied for certification as a sawyer. The use of saws on National Forest System (NFS) lands is prohibited unless an individual is trained, evaluated by a qualified sawyer evaluator, and has received a national sawyer certification card.

This module-based training focuses on **developing a thinking sawyer** and emphasizes risk management, human factors, and sawyer safety. The evaluation process may be separate from this training to allow sawyers time to practice their skills under the supervision of an approved sawyer instructor. Completing this training program does not guarantee certification.

### Course Outline

These training materials are intended for Forest Service employees, agency volunteers, cooperators, and training consultants who use chain saws or crosscut saws on NFS lands. The materials provide operational information for the safe and efficient use of chain saws or crosscut saws and companion tools.

For the purposes of this training, the terms **saw** or **saw program** refer to both chain saws and crosscut saws, unless otherwise specified.

#### **Module 1: Introduction to Saw Operations**

The “Introduction to Saw Operations” module covers National Saw Program policy and legal requirements, sawyer safety, situational awareness, identification of risk, risk management, and developing a standardized OHLEC (objective, hazards, leans/binds, escape paths, cut plan) size-up process.

#### **Module 2: Chain Saws**

The “Chain Saws” module contains three sections: “Chain Saw Basics,” “Bucking and Limbing,” and “Felling.” The section(s) the students require will depend on the certification level they pursue.

#### **Module 3: Crosscut Saws**

The “Crosscut Saws” module contains three sections: “Crosscut Saw Basics,” “Bucking and Limbing,” and “Felling.” The section(s) the students require will depend on the certification level they pursue.

#### **Module 4: Ax Basics, Maintenance, and Use**

The “Ax Basics, Maintenance, and Use” module covers ax basics, maintenance, safety, and use.

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

### □ **Module 5: Fireline Operations**

The “Fireline Operations” module covers fireline safety, the sawyer/swamper team, cutting area control, saw team tasks and tactics, and terminology.

### □ **Module 6: Wedges**

The “Wedges” module covers wedge design and the mechanical advantage wedges provide, various wedge types, proper wedge placement and use, and how to calculate the amount of lift using tree diameter and height.

### □ **Module 7: Hung-up Trees**

The “Hung-up Trees” module defines the term “hung-up trees” and identifies the hazards associated with them, discusses avoiding hung-up trees, explains the OHLEC process for them, and provides techniques for mitigating or removing them.

## Purpose of Course

The USDA Forest Service “National Sawyer Training: Developing Thinking Sawyers” course outlines and describes the operational procedures for the use of saws by Forest Service employees, volunteers, and cooperators. These operational procedures are considered best practices that are designed to protect sawyers from accidental injury or death during saw operations.

All sawyers must be trained, evaluated, and certified through an approved training program, in accordance with FSM 2358. To engage in sawing activities, sawyers must acquire and maintain a USDA Forest Service national sawyer certification card and first aid/cardiopulmonary resuscitation (CPR) certification. The national sawyer certification card has a 3-year expiration date and can be subject to review at any time before it expires.

## Course Goal

The “Developing Thinking Sawyers” course is designed to provide employees, volunteers, and cooperators who are basic to intermediate chain saw and crosscut saw users with the technical knowledge to use these tools safely and effectively.

At the completion of training, a qualified sawyer evaluator will conduct a field evaluation to determine whether a student demonstrates safe saw handling skills and a basic knowledge of course content. The field evaluation will identify the level of certification at which each student is authorized to perform saw work based on the student’s ability to apply learned knowledge and skill in front of an approved sawyer evaluator.

## About this Instructors Guide

This instructors guide is designed to be used in conjunction with PowerPoints, hands-on classroom activities, group discussion, and the “Developing Thinking Sawyers Student Guide.”

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

### Instructors Checklist

Use the checklists in tables 1.0.1 through 1.0.5 to ensure you have everything you need to successfully facilitate this course. Add any items you may need for your course preparations in the blank lines provided.

*Table 1.0.1—About 4 weeks before training*

Preparation	
	Identify the classroom and field locations and take steps to receive necessary approvals from the local unit.
	Perform a site visit to identify cutting opportunities, saw station locations, complexity opportunities, and number and type of trees/logs available.
	Prepare training invitations.
	<p>Study class materials. You should be familiar with and comfortable explaining the content of all materials of the course, including the:</p> <ul style="list-style-type: none"><li>• Instructors guide</li><li>• PowerPoint</li><li>• Student guide: prework</li><li>• Student guide: classroom</li><li>• Activities and videos included in each module</li><li>• Field exercises</li></ul> <p>If time allows, practice answering student questions with another instructor.</p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

*Table 1.0.2—About 2 weeks before training*

Preparation	
	Finalize the attendee list and send out course prework. Follow up and confirm the list of registered participants and provide location information, course details, expectations, and required equipment.
	The ideal ratio for field stations is no more than four students to one instructor. Plan how to handle a larger class size if this ratio is not possible. For example, identify instructors or additional support needs when possible.
	Visit the field location to begin building field stations and to ensure/verify conditions on the ground (i.e., available work, number of trees, student-to-instructor ratio, altered conditions).

*Table 1.0.3—About 1 week before training*

Preparation	
	Confirm final details at the site, including logistics, requesting a projector and screen, a white board or flipchart, and pens and erasers.
	Print necessary materials for the session. Make copies as necessary or contact the site to have copies ready and available.
	Prepare a sign-in sheet and populate it with participants' names, the module title, and your name.
	Send a reminder email to participants.

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Preparation	
	Prepare name tents for each participant.

*Table 1.0.4—Day of class*

Before class	
	Have the sign-in sheet out on a table with a pen to pass around to participants as they sit at tables.
	Set up your area with: <ul style="list-style-type: none"><li>• This instructors guide</li><li>• All items on the materials list for this module</li></ul>
	Set up the computer, projector, and screen. Display the first slide of the PowerPoint module.
	Write “Welcome!” in large letters on the whiteboard or flipchart and include your name below it.
	Ensure each participant's seat has: <ul style="list-style-type: none"><li>• One copy of “Developing Thinking Sawyers Student Guide: Classroom”</li></ul> Optional items: <ul style="list-style-type: none"><li>• One name tag and one name tent</li><li>• One pen and one pad of paper (unless you instructed participants to bring their own)</li><li>• One black marker and one highlighter for every participant (so they can print their names on their name tags, name tents and highlight items in their student guide).</li></ul>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

*Table 1.0.5: After class*

After class	
	Submit sign-in sheets to the appropriate person, if required.
	Submit post-class evaluations to the regional Saw Program manager.

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

### Module 1: Introduction to Saw Operations

Slide/action	Content
  <i>Slide 1: Introduction</i> 	<h3>Welcome and Introduction</h3> <p><b>Time:</b> 160 minutes</p> <p><b>Note:</b> Do not read the slides to the students; speak in a conversational tone and use the slides to actively engage the students in a two-way conversation. Add the occasional brief story or anecdote from your experience to illustrate key concepts.</p> <p><b>DISPLAY FIRST SLIDE</b></p> <h3>Introduction</h3> <p><b>Say:</b></p> <p>Welcome to the USDA Forest Service “National Sawyer Training: Developing Thinking Sawyers” course. This course will begin or continue your journey to becoming a “thinking sawyer.”</p> <p>This course is designed to provide the technical knowledge and skills that you need to safely use chain saws and/or crosscut saws and their associated tools.</p> <p><b>Remind</b> students which module you are teaching today (chain saws, crosscut saws, fireline, etc.).</p> <p><b>Transition:</b></p> <p>During this class, we will work together to complete activities that reinforce what we learn. Let’s take this opportunity to go around the room, introduce ourselves, and get to know each other a little.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<i>Slide 2: Introductions</i> 	<h3>Introductions</h3> <p><b>Say:</b></p> <p>My name is _____. (Briefly introduce yourself and provide a little information about your experience as a sawyer.)</p> <p><b>Ask:</b></p> <p>Each participant to tell the class:</p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="228 709 488 741"><i>Slide 3: Housekeeping</i></p>  <p>The screenshot shows a slide titled "Housekeeping" with a list of items: Cellphones, Restroom locations, Emergency exits, In-class activities and interaction, Participation, and Today's schedule.</p>	<ul data-bbox="591 369 1365 516" style="list-style-type: none"><li>• Their name</li><li>• Why they are taking the class</li><li>• Previous experience related to the Forest Service or as a sawyer</li></ul> <p data-bbox="542 527 711 558"><b>Transition:</b></p> <p data-bbox="542 575 1370 606">There are a few housekeeping items to discuss before we begin.</p> <p data-bbox="542 638 753 669"><b>DISPLAY NEXT SLIDE</b></p> <p data-bbox="542 707 740 739"><b>Housekeeping</b></p> <p data-bbox="542 764 747 795"><b>INSTRUCTOR NOTE:</b></p> <p data-bbox="542 800 1365 905">Inform students about your cell phone policy and participation expectations, give an overview of the schedule, and provide the locations of the restrooms and emergency exits.</p> <p data-bbox="542 936 753 968"><b>DISPLAY NEXT SLIDE</b></p>
<p data-bbox="206 1010 513 1073"><i>Slide 4: Why This Training is Important</i></p>  <p>The screenshot shows a slide titled "Why This Training is Important" with a list of items: Everyone's safety is the most critical concern and Policy - Forest Service Manual (FSM) 2358.03.</p>	<p data-bbox="542 1010 980 1041"><b>Why This Training is Important</b></p> <p data-bbox="542 1066 607 1098"><b>Say:</b></p> <p data-bbox="542 1115 1377 1339">The USDA Forest Service “National Sawyer Training: Developing Thinking Sawyers” course outlines and describes the operational procedures for the use of saws by Forest Service employees, volunteers, and cooperators. These operational procedures are considered best practices that are designed to protect sawyers from accidental injury or death during saw operations.</p> <p data-bbox="542 1371 1409 1633">All sawyers must be trained, evaluated, and certified through an approved training program, in accordance with FSM 2358. To engage in sawing activities, sawyers must acquire and maintain a USDA Forest Service national sawyer certification card and first aid/cardiopulmonary resuscitation (CPR) certification. This national sawyer certification card has a 3-year expiration date and can be subject to review at any time before it expires.</p> <p data-bbox="542 1665 711 1696"><b>Transition:</b></p> <p data-bbox="542 1713 1243 1745">Next, we will discuss what we will cover in this course.</p> <p data-bbox="542 1776 753 1808"><b>DISPLAY NEXT SLIDE</b></p>

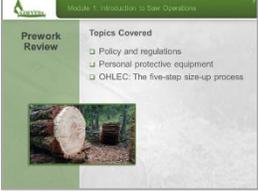
# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 5: Course Outline</i></p>  <p>The slide shows a course outline for Module 1: Introduction to Saw Operations. The outline lists seven modules: Module 1 - Introduction to Saw Operations, Module 2 - Chain Saw Basics, Module 3 - Crosscut Saw Basics, Module 4 - Ax Basics, Module 5 - Finesse Operations, Module 6 - Wedges and Wedge Use, and Module 7 - Hang-up Trees.</p>	<h3>Course Outline</h3> <p><b>Say:</b></p> <p>The course contains seven modules. Module 1 applies to all sawyers. As discussed in the prework, you only have to take the modules required for your desired qualification.</p> <p><b>INSTRUCTOR NOTE:</b></p> <p>Refer the students to the agendas available in appendix A for the qualification path you are teaching today. Take a minute to point each student to the right agenda for their course.</p> <p><b>Transition:</b></p> <p>The topic covered in this first module (module 1) is an introduction to saw operations where we focus on sawyer personal protective equipment (PPE), identifying risk, risk management, and developing the objective, hazards, leans/binds, escape routes, cut plan (OHLEC) process.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 6: Module Objectives</i></p>  <p>The slide lists module objectives for Module 1: Introduction to Saw Operations. The objectives are: 1. Identify the guiding documents associated with the Forest Service Saw Program and its policies. 2. Recognize the levels of sawyer certification. 3. List the three key safety concepts. 4. Identify the required personal protective equipment (PPE) and proper fit for both routine and fire use. 5. Identify and discuss how human factors affect sawyer operations. 6. Identify and discuss components of the OHLEC (objective, hazards/obstacles, leans/binds, escape plan, cut plan) set-up process. 7. Discuss operational competency and its relationship to a sawyer's knowledge and skill.</p>	<h3>Module Objectives</h3> <p><b>REVIEW</b></p> <p>Review the objectives listed on the slide.</p> <p><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="217 365 501 394"><i>Slide 7: Prework Review</i></p> 	<h3 data-bbox="542 365 773 394">Prework Review</h3> <p data-bbox="542 422 626 451"><b>REVIEW</b></p> <p data-bbox="542 457 1182 487">Review the topics covered in the prework packet.</p> <p data-bbox="542 514 607 548"><b>Say:</b></p> <p data-bbox="542 569 1360 674">We will cover some of these topics again here in the classroom because they are important for safety or have more details you need to know. The rest we will review now.</p> <p data-bbox="542 705 748 735"><b>INSTRUCTOR NOTE:</b></p> <p data-bbox="542 741 1344 846">Allow students a few moments to answer the questions in the student guide, then discuss the answers. Confirm the correct answers and discuss any misconceptions.</p> <h3 data-bbox="542 877 821 911">Review Questions</h3> <p data-bbox="542 932 1390 1003"><b>Q:</b> List two documents that guide the Forest Service National Saw Program and policy.</p> <p data-bbox="542 1031 1401 1136"><b>A:</b> FSM 2358—Saw Program, 29 Code of Federal Regulations (CFR) 1910.266—Logging Operations, Occupational Safety and Health Administration (OSHA).</p> <p data-bbox="542 1167 1414 1239"><b>Q:</b> Where can you find information about individual responsibilities in the National Saw Program?</p> <p data-bbox="542 1266 1333 1337"><b>A:</b> FSM 2358.06, Exhibit 02—Sawyer Responsibilities and Limitations and Training, Knowledge, and Skill Requirements.</p> <p data-bbox="542 1365 1084 1394"><b>Q:</b> What are the two key safety concepts?</p> <p data-bbox="542 1421 1200 1451"><b>A:</b> Risk management and proper use and fit of PPE.</p> <p data-bbox="542 1478 1268 1507"><b>Q:</b> Where can you find information about required PPE?</p> <p data-bbox="542 1535 1198 1564"><b>A:</b> FSM 2358.07c—Personal Protective Equipment.</p> <p data-bbox="542 1604 711 1638"><b>Transition:</b></p> <p data-bbox="542 1656 1360 1728">Your safety, the safety of your coworkers, and the safety of the public are of the utmost importance.</p> <p data-bbox="542 1755 753 1785"><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="272 363 444 394"><i>Slide 8: Safety</i></p>  A photograph of a log with a chainsaw blade resting on it. The word "Safety" is written in a black box in the bottom right corner of the image.	<h3 data-bbox="540 363 647 401">Safety</h3> <p data-bbox="540 426 607 464"><b>Say:</b></p> <p data-bbox="540 476 1411 779">Safety is a critical concern in chain saw and crosscut saw operations. It should be a part of every plan you prepare and every action you take. Careful study and practice of saw operations will improve your abilities and help you to identify your limitations. Sawyers are obligated to say "no" and to walk away from any situation they determine to be an unacceptable risk. Sawyer safety comes down to two key concepts: risk management and proper use and fit of PPE.</p> <p data-bbox="540 810 711 848"><b>Transition:</b></p> <p data-bbox="540 861 1401 972">PPE is a requirement that OSHA instituted to help protect sawyers from injury. The type of PPE a sawyer requires depends on the type of saw used and whether the sawyer is in a fire environment.</p> <p data-bbox="540 999 753 1031"><b>DISPLAY NEXT SLIDE</b></p>
<p data-bbox="228 1073 492 1171"><i>Slide 9: Personal Protective Equipment: Nonfire</i></p>  A diagram showing a person wearing various pieces of PPE. Labels with arrows point to: "Head protection" (yellow helmet), "Eye protection" (safety glasses), "Hearing protection" (earplugs), "Gloves", "Chains that swing tools like a chainsaw", "CUT-RESISTANT", and "Boots".	<h3 data-bbox="540 1073 1110 1110">Personal Protective Equipment: Nonfire</h3> <p data-bbox="540 1136 607 1173"><b>Say:</b></p> <p data-bbox="540 1186 1414 1297">PPE is designed to protect you from injury in the event of a mishap. All sawyers are required to wear the appropriate PPE outlined in FSM 2358.06—Qualifications.</p> <p data-bbox="540 1325 748 1356"><b>INSTRUCTOR NOTE:</b></p> <p data-bbox="540 1369 1401 1430">If you are only teaching fireline sawyers, advance to “Fireline PPE” (slide 10).</p> <p data-bbox="540 1461 704 1499"><b>Discussion</b></p> <p data-bbox="540 1512 1401 1661">Encourage open discussion about the PPE. Hold up each piece and explain any nuances about it. Discuss proper fit (helmet), the different types of PPE you can wear, and what you use each type for (eye protection, hearing protection, gloves, etc.).</p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

### **INSTRUCTOR NOTE:**

Refer to the manufacturer's instructions for the PPE you are demonstrating. Point out the asterisk on the slide and refer students to table 1.0.2 in the student guide, which describes the differences between chain saw and crosscut saw PPE.

### **Head protection**

- Chain saw: a helmet that meets American National Standards Institute (ANSI) Z89.1
- Crosscut saw: same as chain saw

### **Eye protection**

- Chain saw: ANSI Z87.1 safety glasses or equivalent : mesh bug-eye type or mesh face shield (OSHA Note: 1910.266(d)(1)(vii)(B))
- Crosscut saw: same as chain saw

### **Hearing protection**

- Chain saw: hearing protection (85 decibels and above)
- Crosscut saw: none required

### **Hand protection**

- Chain saw: chain saw mitts or gloves appropriate for the weather conditions
- Crosscut saw: gloves appropriate for the weather conditions

### **Shirt**

- Chain saw: long sleeves required
- Crosscut saw: long sleeves optional

### **Pants**

- Chain saw: loose-fitting without a solid hem or with a hem you can tuck into your boots
- Crosscut saw: same as chain saw

### **Leg protection**

- Chain saw: chaps or cut-resistant pants that overlap your boots by at least 2 inches
- Crosscut saw: None required

### **Foot protection/boots**

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="201 596 516 659"><i>Slide 10: Personal Protective Equipment: Fire</i></p> 	<ul data-bbox="591 365 1373 512" style="list-style-type: none"><li>• Chain saw: cut-resistant, laced boots that provide ankle support and have nonskid soles</li><li>• Crosscut saw: boots that provide ankle support and have nonskid soles</li></ul> <p data-bbox="542 522 753 548"><b>DISPLAY NEXT SLIDE</b></p> <h3 data-bbox="542 596 1062 627">Personal Protective Equipment: Fire</h3> <p data-bbox="542 653 607 684"><b>Say:</b></p> <p data-bbox="542 701 1354 890">When operating a saw in a fire environment, sawyer PPE requirements differ from those used in a nonfire environment. Sawyers on the fireline must wear all PPE required by the “Interagency Standards for Fire and Fire Aviation Operations (Redbook), Chapter 7—Safety and Risk Management.”</p> <h4 data-bbox="542 915 760 947">Head protection</h4> <ul data-bbox="591 978 1365 1087" style="list-style-type: none"><li>• Chain saw: a helmet that meets National Fire Protection Association (NFPA) 1977</li><li>• Crosscut saw: same as chain saw</li></ul> <h4 data-bbox="542 1098 737 1129">Eye protection</h4> <ul data-bbox="591 1161 1377 1270" style="list-style-type: none"><li>• Chain saw: ANSI Z87.1 safety glasses or equivalent (mesh bug-eye type)</li><li>• Crosscut saw: same as chain saw</li></ul> <h4 data-bbox="542 1281 792 1312">Hearing protection</h4> <ul data-bbox="591 1344 1312 1453" style="list-style-type: none"><li>• Chain saw: hearing protection required for gasoline-powered chain saw use</li><li>• Crosscut saw: none required</li></ul> <h4 data-bbox="542 1463 760 1495">Hand protection</h4> <ul data-bbox="591 1526 1062 1591" style="list-style-type: none"><li>• Chain saw: leather gloves</li><li>• Crosscut saw: same as chain saw</li></ul> <h4 data-bbox="542 1602 607 1633">Shirt</h4> <ul data-bbox="591 1665 1224 1730" style="list-style-type: none"><li>• Chain saw: flame-resistant, long-sleeved shirt</li><li>• Crosscut saw: same as chain saw</li></ul> <h4 data-bbox="542 1740 613 1772">Pants</h4> <ul data-bbox="591 1803 1131 1869" style="list-style-type: none"><li>• Chain saw: flame-resistant, long pants</li><li>• Crosscut saw: same as chain saw</li></ul>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
	<p><b>Leg protection</b></p> <ul style="list-style-type: none"> <li>Chain saw: chaps that meet the requirements of Forest Service Specification 6170-4 and overlap your boots by at least 2 inches</li> <li>Crosscut saw: none required</li> </ul> <p><b>Foot protection/boots</b></p> <ul style="list-style-type: none"> <li>Chain saw: cut-resistant or leather, laced, 8-inch-high boots that provide ankle support and have nonskid soles</li> <li>Crosscut saw: same as chain saw</li> </ul> <p><b>Transition:</b></p> <p>Before performing any work, project, or activity that requires PPE, sawyers must demonstrate an understanding of its proper use and how to wear it.</p> <p><b>DISPLAY NEXT SLIDE</b></p> <p><b>Ensure Proper Fit</b></p> <p><b>Say:</b></p> <p>PPE must fit the individual sawyer properly and be clean and in good condition. Accidents and injuries may result from failing to use or from misusing required PPE.</p> <p><b>PPE guidelines</b></p> <ul style="list-style-type: none"> <li><b>Head protection:</b> All helmets should be designed to provide protection from impact and penetration hazards from falling objects. Inspect shells daily for dents, cracks, signs of penetration, or any other damage that might compromise protection. Also inspect suspension systems, headbands, sweatbands, and any accessories daily.</li> <li><b>Eye and face protection:</b> All employees require appropriate protection (including side protection) when they are exposed to eye or face hazards, such as flying particles.</li> <li><b>Hearing protection:</b> To comply with 29 CFR 1910.95—Occupational Noise Exposure, employees must wear ear plugs, earmuffs, or both when working with equipment louder than 85 decibels.</li> </ul>

Slide 11: Ensure Proper Fit



# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

Slide/action	Content
	<ul style="list-style-type: none"><li>• <b>Hand protection:</b> Ensure that hand protection is appropriate for the weather conditions. Fireline work requires leather gloves.</li><li>• <b>Shirt:</b> Long-sleeved shirts are recommended for all saw operations. Fireline work requires flame-resistant shirts for both chain saw and crosscut saw operations.</li><li>• <b>Pants:</b> Pants are required for all sawyer operations. Pants should fit comfortably but not be too loose. Fireline work requires flame-resistant pants.</li><li>• <b>Leg protection:</b> Sawyers must properly adjust chain saw chaps/pants and wear them snug to keep them positioned correctly on the legs. Chaps should provide coverage 2 inches below the boot tops. Proper fit and length maximize protection.</li><li>• <b>Boots:</b> Chain saw use requires cut-resistant or leather boots with nonskid soles and adequate ankle support.</li></ul> <p><b>Transition:</b> Now that we have had a chance to review our PPE, let's take a few minutes to talk about first aid kits.</p> <p><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

---

### Slide 12: First Aid Kit Contents



### First Aid Kit

#### Say:

Subsection 29 CFR 1910.266(d)(2)(i)—Logging Operations mandates a first aid kit in each employee transport vehicle and at each worksite where employees are cutting trees (e.g., felling, bucking, limbing).

The number of first aid kits and the content of each kit must reflect the degree of isolation, the number of employees, and the hazards reasonably anticipated at the worksite. At a minimum (for small sites with two to three employees) each kit must contain:

- Gauze pads at least 4 by 4 inches
- Two large gauze pads at least 8 by 10 inches
- A box of adhesive bandages (Band-Aids)
- One gauze bandage roll at least 2 inches wide
- Two triangular bandages
- Wound-cleaning agent, such as sealed, moistened towelettes
- Scissors
- One blanket
- Tweezers
- Adhesive tape
- Latex gloves
- Resuscitation equipment, such as a resuscitation bag, airway, or pocket mask
- Two elastic wraps
- Splint
- Directions for requesting emergency assistance

Other recommended items:

- Tourniquet
- Clotting agent
- Trauma dressing

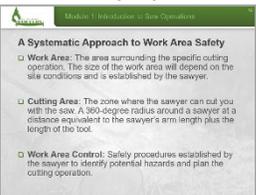
#### Transition:

Hopefully, you will not need your first aid kit because you are careful, safe, and aware of your surroundings and situation.

**DISPLAY NEXT SLIDE**

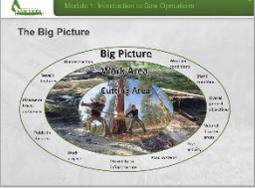
# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 13: Work Area Safety</i></p>  A photograph of a log with a chainsaw blade resting on it. The text "Work Area Safety" is overlaid on the image.	<h3>Work Area Safety</h3> <p><b>Say:</b></p> <p>When you enter the outdoors, you enter a dynamic environment. You can improve safety with intentional observations of the work area.</p> <p><b>Transition:</b></p> <p>The next video, “Tree Hazards and Target Avoidance,” is intended to help improve onsite awareness and work safety.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 14: Video: Tree Hazards and Target Avoidance</i></p>  A video player interface showing a video titled "Tree Hazards and Target Avoidance Video".	<h3>Video: Tree Hazards and Target Avoidance</h3>
<p><i>Slide 15: A Systematic Approach to Work Area Safety</i></p>  A slide titled "A Systematic Approach to Work Area Safety" with three bullet points: Work Area, Cutting Area, and Work Area Control.	<h3>A Systematic Approach to Work Area Safety</h3> <p><b>Say:</b></p> <p>A systematic approach to work area safety begins with some definitions:</p> <ul style="list-style-type: none"><li>• <b>Work area:</b> The area surrounding the specific cutting operation. The sawyer establishes the size of the work area based on the site conditions.</li><li>• <b>Cutting area:</b> The zone where the sawyer can cut you with the saw. A 360-degree radius around the sawyer at a distance equivalent to the sawyer’s arm length plus the length of the tool.</li><li>• <b>Work area controls:</b> Safety procedures established by the sawyer to identify potential hazards and to plan the cutting operation.</li></ul> <p><b>DISPLAY NEXT SLIDE</b></p>

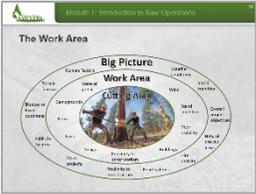
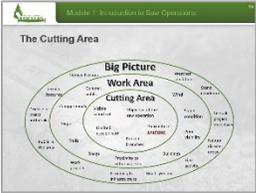
# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="219 363 500 430"><i>Slide 16: The Outside-In Approach</i></p> 	<h3 data-bbox="540 363 896 394">The Outside-In Approach</h3> <p data-bbox="540 422 607 453"><b>Say:</b></p> <p data-bbox="540 470 1406 810">The “outside-in approach” is a systematic procedure to assess the conditions of the entire work area before engaging in the cutting operation. The goal is to observe the big picture first, starting with a wide-angle lens and then moving in, narrowing your focus to the point where you will make the cuts. Look up, down, and all around for potential hazards before moving slowly toward the center of the work area. Take your time. You can visualize the approach as a concentric circle with the big picture on the periphery, the work areas in the middle, and the cutting area at the center.</p> <p data-bbox="540 842 1390 909">Next, we will review some examples of conditions within the “big picture,” “work area,” and “cutting area.”</p> <p data-bbox="540 940 753 968"><b>DISPLAY NEXT SLIDE</b></p>
<p data-bbox="219 1014 500 1045"><i>Slide 17: The Big Picture</i></p> 	<h3 data-bbox="540 1014 761 1045">The Big Picture</h3> <p data-bbox="540 1073 607 1104"><b>Say:</b></p> <p data-bbox="540 1121 1166 1152">The big picture (known conditions upon arrival):</p> <ul data-bbox="591 1184 1406 1608" style="list-style-type: none"><li data-bbox="591 1184 1406 1251">● <b>Overall project objectives.</b> (Note: This is different from the specific OHLEC objective.)</li><li data-bbox="591 1262 1406 1329">● <b>Predominant hazards:</b> standing dead trees, disease pockets, insect outbreaks, etc.</li><li data-bbox="591 1339 1406 1407">● <b>General surface hazards:</b> recent storm damage, mudslides, weather, dead and downed wood, etc.</li><li data-bbox="591 1417 1406 1444">● <b>General terrain:</b> flat ground, rolling hills, steep slopes, etc.</li><li data-bbox="591 1455 1406 1522">● <b>Proximity to infrastructure:</b> towns, road systems, powerline corridors, etc.</li><li data-bbox="591 1533 1406 1600">● <b>Use level or activity:</b> open to the public, work projects occurring, fire activity, etc.</li></ul> <p data-bbox="540 1675 786 1703"><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p>Slide 18: The Work Area</p> 	<p><i>The Work Area</i></p> <p><b>Say:</b></p> <p>The work area (continued observation):</p> <ul style="list-style-type: none"><li>• <b>Observed hazards:</b> predominant tree lean, stand condition, wind/weather, visibility, etc.</li><li>• <b>Surface hazards:</b> loose rocks that make walking difficult, lots of stump holes, etc.</li><li>• <b>Terrain:</b> changes in slope; mostly flat, even ground; recent weather event, etc.</li><li>• <b>Infrastructure:</b> buildings, picnic tables, roads, trails, powerlines, etc.</li><li>• <b>People:</b> general public, work crews, fire personnel, etc.</li></ul> <p><b>DISPLAY NEXT SLIDE</b></p>
<p>Slide 19: Cutting Area</p> 	<p><i>The Cutting Area</i></p> <p><b>Say:</b></p> <p>The cutting area—OHLEC size-up process (observed conditions in cutting area)</p> <ul style="list-style-type: none"><li>• Objective of the saw operation</li><li>• <b>Observed hazards at the base of the tree:</b> broken branches, frost cracks, visible wood rot, fungi, etc.</li><li>• <b>Surface hazards in cutting area:</b> uneven ground, steep slope, poor footing, etc.</li><li>• <b>Cutting area terrain:</b> poor footing, slippery conditions, limited escape path, rocky, wet, brushy or bare.</li><li>• Human Factors</li></ul> <p><b>DISPLAY NEXT SLIDE</b></p>

**USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers**  
Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 20: Human Factors</i></p> 	<p><b>Human Factors</b></p> <p><b>Say:</b></p> <p>It is critical to understand how thoughts and memories apply to safety.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 21: What are Human Factors?</i></p> 	<p><b>What are Human Factors?</b></p> <p><b>Say:</b></p> <p>When you are unaware of the thoughts and memories that drive your actions and decisions, your actions can have negative consequences that can create a safety hazard for you or others around you.</p> <p>“Switchback” is a term used to define the thought struggle between the “fight or flight” response. This struggle can become a problem because you must manage it on the fly.</p> <p>It is a natural response for your thoughts to race when you make mistakes in front of others. Adrenaline starts to flow, your heart rate increases, and you have increased reactivity and decreased awareness. This lowers your ability to take in and process information, reducing the quality of your decision making.</p> <p><b>Transition:</b></p> <p>In a few minutes we are going to watch a video that explains how human factors, such as thoughts and memories, can impact a sawyer, and how to develop a mental toughness that will help to enhance your safety. First, let’s define “mental toughness.”</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 22: Developing Thinking Sawyers</i></p> 	<p><b>Developing Thinking Sawyers</b></p> <p><b>Say:</b></p> <p><b>Mental toughness</b> is becoming aware of and monitoring your thoughts so that you know where your attention is and what is driving your decision making at any time. It is understanding how memories can put you at risk through distraction or emotional</p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 23: Video: Human Factors and the Thinking Sawyer</i></p> 	<p>reactivity. In developing mental toughness, you learn to manage your memories and thinking to maximize cognitive function. Mental toughness requires that you understand what it means to stay in team and that you learn how to get back in team if you lose focus.</p> <p><b>Transition:</b></p> <p>The title of the video we are about to watch is “Human Factors and the Thinking Sawyer.”</p> <p><b>DISPLAY NEXT SLIDE</b></p> <p><b>Video: Human Factors and the Thinking Sawyer</b></p> <p><b>Transition:</b></p> <p>Be aware of your thoughts as we go through this next exercise.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 24: How Thinking Sawyers Recover</i></p> 	<p><b>Video: How Thinking Sawyers Recover</b></p> <p><b>Say:</b></p> <p>This next video is designed to give you tools to realize when you are not in team and what to do to get back in team.</p> <p><b>Transition:</b></p> <p>Our next topic is risk management.</p> <p><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 25: Risk Management</i></p>  A photograph of a chainsaw chain and a log in a forest setting. The text "Risk Management" is overlaid on the bottom right of the image.	<h3>Risk Management</h3> <p><b>Say:</b></p> <p>Risk management is the deliberate action taken by an individual to manage risk by identifying hazards and threats and developing ways to mitigate and minimize the consequences. Risk management seeks to reduce risks to acceptable levels, knowing we will not be able to completely reduce all risks.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 26: What is Risk Management?</i></p>  A slide titled "What is Risk Management?" with a bulleted list: "An iterative process that:", "↳ Is responsive to change", "↳ Can incorporate learning and feedback", "↳ Is intentional about processes", "↳ Will explicitly address uncertainty".	<h3>What is Risk Management?</h3> <p><b>Say:</b></p> <p>Risk management is iterative, responsive to change, and intentional about process. It incorporates learning and feedback and explicitly addresses uncertainty. A goal of risk management is to develop sufficient proficiency in applying the process so that risk management itself becomes an automatic part of the decision-making process.</p> <p><b>Transition:</b></p> <p>It is important to remember that risk management is a continuous process during which you are always evaluating the sawing operation, including your mental state.</p> <p><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="266 365 456 394"><i>Slide 27: OHLEC</i></p>  A photograph of a log lying on the ground in a forest setting. A chainsaw is positioned on top of the log. The text 'OHLEC' is overlaid on the bottom right of the image.	<h3 data-bbox="542 365 1040 405">OHLEC: The Five-Step Size-Up</h3> <p data-bbox="542 426 607 466"><b>Say:</b></p> <p data-bbox="542 478 1396 821">OHLEC is a systematic, five-step, size-up process during which you identify an <b>objective</b>, consider <b>hazards</b> related to the objective, determine <b>leans or binds</b> relative to the objective, develop an <b>escape plan</b>, and then develop a <b>cut plan</b>. At any point during the process, your analysis may reveal conditions that cause you to reevaluate or change the objective. When the objective changes, you restart the process because a new objective may present different hazards and leans or binds, consequently requiring a different escape path or cut plan.</p> <p data-bbox="542 848 753 877"><b>DISPLAY NEXT SLIDE</b></p>
<p data-bbox="204 921 513 951"><i>Slide 28: OHLEC: Objective</i></p>  A photograph of a log lying on the ground in a forest setting. The text 'OHLEC: Objective' is overlaid on the top left of the image. Below the text, there are two bullet points: 'Develop an objective for the cutting operation' and 'Where do you want the piece of log to end up?'. Below the text and bullet points is a small inset photograph of a log lying on the ground in a forest setting.	<h3 data-bbox="542 934 797 974">OHLEC: Objective</h3> <p data-bbox="542 995 607 1035"><b>Say:</b></p> <p data-bbox="542 1047 1409 1115">The objective is a statement about the purpose of the operation; it conveys what you intend to do.</p> <p data-bbox="542 1142 1393 1209">When analyzing the objective, determine where you want the cut piece to end up:</p> <ul data-bbox="591 1245 1406 1514" style="list-style-type: none"><li data-bbox="591 1245 1227 1274">• If felling, identify the intended lay of the tree.</li><li data-bbox="591 1283 1406 1350">• If bucking, plan where you want the bucked log or round to land.</li><li data-bbox="591 1358 1305 1425">• If limbing, determine the sequence for cutting large branches and directing their fall.</li><li data-bbox="591 1434 1362 1501">• If brushing, particularly in thick brush, plan how you will remove the brush after you cut it.</li></ul> <p data-bbox="542 1577 708 1617"><b>Transition:</b></p> <p data-bbox="542 1629 1393 1734">Once you determine the objective of the cutting operation, relate all other steps in the OHLEC size-up process to this specific objective.</p> <p data-bbox="542 1766 753 1795"><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 29: OHLEC: Hazards</i></p>  <p>The screenshot shows a slide titled "OHLEC: Hazards" with the following content:</p> <ul style="list-style-type: none"><li>Develop a plan to identify the hazards and obstacles in the cutting process<ul style="list-style-type: none"><li>Overhead</li><li>What's inside</li><li>Upslope and downslope</li><li>Bearing points/pivots</li><li>Other environmental factors</li></ul></li></ul> <p>A photograph on the right side of the slide shows a person standing next to a large log in a forest setting.</p>	<h3>OHLEC: Hazards</h3> <p><b>Say:</b></p> <p>When implementing the OHLEC process during saw operations, identified hazards directly relate to the selected objective (i.e., where you will place the bucked log or where the tree will fall [lay] when cut). Although many hazardous conditions exist in the natural environment, this step in the OHLEC size-up process focuses only on those hazards that directly relate to achieving the objective of the cutting operation.</p> <p>Consider the following when identifying hazards:</p> <ul style="list-style-type: none"><li>• What is overhead (fire, rotten top, widowmakers, and loose bark)?</li><li>• What is inside the wood you are cutting (fire, rot and hinge wood integrity, hollow, bar/saw length compared to diameter, bees, or poisonous plants)?</li><li>• Are there buildings, equipment, or other trees you do not want to damage?</li><li>• Are there any hazards associated with cutting area control?</li></ul> <p>You must control the cutting area to eliminate hazards to others. You must consider other workers or bystanders, the public, access points, and steep slopes, and should pay special attention to the proximity of swampers. The size of the area you must control depends on the operation.</p> <p><b>TRANSITION:</b></p> <p>If there are no hazards that you cannot mitigate, it is time to go to the next step, which is to assess the leans or binds.</p> <p><b>DISPLAY NEXT SLIDE</b></p>

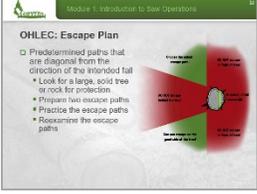
**USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers  
Module 1: Introduction to Saw Operations**

---

Slide/action	Content
<p data-bbox="245 365 472 428"><i>Slide 3014: OHLEC: Leans/Binds</i></p> 	<p data-bbox="542 378 833 413"><b>OHLEC: Leans/Binds</b></p> <p data-bbox="542 436 607 472"><b>Say:</b></p> <p data-bbox="542 489 1396 751">You assess leans or binds to determine the type and sequence of cuts needed. When felling, you assess the lean by the tilt of a tree away from its vertical position. In bucking, you identify and assess the binds based on the orientation of the log. Compression and tension are the two major components of a bind. Identifying the bind will help you determine your technique and procedure for bucking.</p> <ul data-bbox="591 783 1414 930" style="list-style-type: none"><li>• Project the fall based on the lean.</li><li>• Predict binds based on bearing points and the lay of the log.</li><li>• Determine the reactionary forces to expect when you cut the log.</li></ul> <p data-bbox="542 942 709 978"><b>Transition:</b></p> <p data-bbox="542 995 1386 1102">Hazards such as those we've discussed require you to develop an escape plan that is purposeful and resilient enough to position yourself in a safe area when the tree or log releases.</p> <p data-bbox="542 1131 753 1157"><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="217 365 503 428"><i>Slide 31: OHLEC: Escape Plan</i></p> 	<h3 data-bbox="542 380 829 415">OHLEC: Escape Plan</h3> <p data-bbox="542 436 607 472"><b>SAY:</b></p> <p data-bbox="542 495 1406 604">An escape plan has a minimum of two escape paths (identified as “primary” and “secondary”). To ensure your safety, you must clear both paths (to a reasonable degree) of obstructions.</p> <p data-bbox="542 632 1406 701">Escape paths are predetermined paths where you can escape once the tree begins to fall or the bucked log begins to move.</p> <h3 data-bbox="542 728 732 764">Escape Paths</h3> <p data-bbox="542 785 1406 968">With the desired felling direction in mind, determine escape paths and safety zones that lead diagonally away from the direction of the intended fall. Consider the side of the tree where you will make your final cut and select a path that will not take you directly behind the tree.</p> <ul data-bbox="591 1003 1406 1310" style="list-style-type: none"><li>• Look for a large, solid tree or rock for protection.</li><li>• Prepare two escape paths in case you change your location on the final cut.</li><li>• Practice using the escape paths, making sure to clear any debris that could trip you.</li><li>• Re-examine the escape paths before you begin to cut, and ensure that your chosen paths will be the safest escape paths.</li></ul> <p data-bbox="542 1318 1406 1388">Your plans must be flexible enough to account for and adapt to the unexpected.</p> <p data-bbox="542 1415 711 1451"><b>Transition:</b></p> <p data-bbox="542 1472 1292 1507">Before you begin to cut, you must also develop a cut plan.</p> <p data-bbox="542 1528 753 1564"><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p data-bbox="207 363 508 394"><i>Slide 32: OHLEC: Cut Plan</i></p>  <p>The screenshot shows a presentation slide with the following content: OHLEC: Cut Plan □ Develop the cut plan for the cutting operation • Determine the cutting sequence • Determine the type of cuts required □ The wedging plan will include: • Wedges needed • Sequence of wedges A photograph of a logger working in a forest is also visible on the slide.</p>	<h3 data-bbox="542 363 769 394">OHLEC Cut Plan</h3> <p data-bbox="542 422 607 453"><b>Say:</b></p> <p data-bbox="542 474 1393 737">The cut plan is the last stage of the OHLEC size-up process and determines the type and sequence of cuts that will ultimately guide the tree or log segment into the objective (or intended lay). The results of the cut plan will determine the ultimate complexity of the operation. Your evaluation of the complexity of the assignment must be thorough and honest in order to answer the question, “Should I cut this or not?”</p> <p data-bbox="542 764 1414 873">The cut plan accounts for the objective, hazards, leans/binds, and escape plan. The cut plan is the final step in the OHLEC process and is how you tie the plan together.</p> <ul data-bbox="591 905 1243 1052" style="list-style-type: none"><li>▪ Develop the cut plan for the cutting operation.</li><li>▪ Determine the cutting sequence.</li><li>▪ Determine the type of cuts required.</li></ul> <p data-bbox="542 1083 1349 1192">If the cut plan requires the use of wedges, you must develop a wedging plan before initiating the cut. The wedging plan, if needed, will consider:</p> <ul data-bbox="591 1224 1179 1314" style="list-style-type: none"><li>▪ Number, kind, and size of wedges needed</li><li>▪ Sequence for setting wedges</li></ul> <p data-bbox="542 1346 711 1377"><b>Transition:</b></p> <p data-bbox="542 1398 1360 1461">Next, we’ll discuss how OHLEC allows you to assess operational complexity.</p> <p data-bbox="542 1493 786 1524"><b>DISPLAY NEXT SLIDE</b></p>

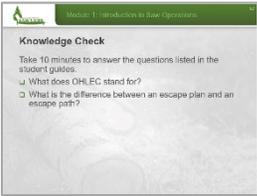
# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 33: Operational Complexity</i></p> 	<h3>Operational Complexity</h3> <p><b>Say:</b></p> <p>Taking into consideration all the steps you analyzed during the OHLEC size-up process, you should conduct an honest assessment of the cutting operation to determine if you have the knowledge, skills, and qualification to manage the overall complexity of the operation.</p> <p>Your evaluation of the complexity of the assignment must be thorough and honest in order to answer the question, “Should I cut this or not?”</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 34: Operational Complexity Chart</i></p> 	<h3>Operational Complexity Chart</h3> <p><b>Discuss</b></p> <p>Begin the discussion by explaining that the complexity of the cutting operation must be within a sawyer’s ability, skill, and qualification before they proceed. If at any point the cutting operation is too complex, the sawyer must either reassess the objective and develop another plan or walk away.</p> <p>Ask students to read the “Low,” “Moderate,” and “High” columns. Discuss the topic of subjectivity but stress that each individual sawyer must ultimately be the one to decide to cut or not.</p> <p><b>Transition:</b></p> <p>So how do we put it all together?</p> <p><b>DISPLAY NEXT SLIDE</b></p>

# USDA Forest Service National Sawyer Training: Developing Thinking Sawyers

## Module 1: Introduction to Saw Operations

Slide/action	Content
<p><i>Slide 3515: Putting It All Together</i></p> 	<h3>Putting It All Together</h3> <p><b>Say:</b></p> <p>This module provided guidance on risk reduction, use of safety equipment, and the OHLEC size-up process. With safety being so critical, it is imperative that you constantly survey your surroundings and seek to reduce risk as much as you can. One of the ways to accomplish this is by using the OHLEC size-up process: objective, hazards, leans/binds, escape plan, and cut plan.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 36: Knowledge Check</i></p> 	<h3>Knowledge Check</h3> <p>Allow students 10 minutes to answer the questions in their student guides.</p> <p><b>Q:</b> What does OHLEC stand for?</p> <p><b>A:</b> Objective, hazards, leans or binds, escape plan, and cut plan</p> <p><b>Q:</b> What is the difference between an escape plan and an escape path?</p> <p><b>A:</b> An escape plan is the selection, practice, and re-examination of two escape paths, a primary and a secondary path, before you begin to cut.</p> <p><b>DISPLAY NEXT SLIDE</b></p>
<p><i>Slide 3716: Summary</i></p> 	<h3>Summary</h3> <p><b>REVIEW</b></p> <p>Review the summary objectives listed on the slide.</p> <p><b>DISPLAY NEXT SLIDE</b></p>

USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers

Module 1: Introduction to Saw Operations

---

Slide/action	Content
<p><i>Slide 38: Questions</i></p> 	<p><b>Questions</b></p> <p><b>Ask:</b></p> <p>Do you have any questions about this introductory material, including OHLEC?</p> <p><b>Answer appropriately</b></p>

**USDA Forest Service National Sawyer Training:  
Developing Thinking Sawyers**  
Module 1: Introduction to Saw Operations

---

*This page intentionally left blank.*