Safety Requirements

- Personal Protective Equipment (PPE)
- Job Hazard Analysis (JHA)
- Trailhead Communication Plan (TCP)
- Emergency Action Plan (EAP)
- Communications Device
## Personal Protective Equipment (PPE)

**Crosscut** *(All equipment must meet USFS standards)*

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Hat</td>
<td>Full brim or cap style</td>
</tr>
<tr>
<td>Eye Protection</td>
<td>Safety glasses or shield when chopping or driving wedges (ANSI z87.1)</td>
</tr>
<tr>
<td>Hearing Protection</td>
<td>Not Required</td>
</tr>
<tr>
<td>Long-sleeve Shirt</td>
<td>Required</td>
</tr>
<tr>
<td>Gloves</td>
<td>Slip-resistant, appropriate for the weather</td>
</tr>
<tr>
<td></td>
<td>Cut-resistant, when filing &amp; handling saw conditions</td>
</tr>
<tr>
<td>Trousers</td>
<td>Loose fitting</td>
</tr>
<tr>
<td>Boots</td>
<td>Heavy-duty, cut resistant or leather, laced,</td>
</tr>
<tr>
<td></td>
<td>with non-skid soles and adequate ankle support</td>
</tr>
<tr>
<td>First Aid</td>
<td>OSHA-compliant kit, one with each saw crew</td>
</tr>
</tbody>
</table>
### Personal Protective Equipment (PPE)

**Chain saw** *(All equipment must meet USFS standards)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hard Hat</strong></td>
<td>Full brim or cap style</td>
</tr>
<tr>
<td><strong>Eye Protection</strong></td>
<td>Safety glasses, goggles or shield (ANSI z87.1)</td>
</tr>
<tr>
<td><strong>Hearing Protection</strong></td>
<td>Plugs or muffs</td>
</tr>
<tr>
<td><strong>Long-sleeve Shirt</strong></td>
<td>Required at all times</td>
</tr>
<tr>
<td><strong>Gloves</strong></td>
<td>Slip-resistant, appropriate for the weather conditions</td>
</tr>
<tr>
<td></td>
<td>Cut-resistant, when filing</td>
</tr>
<tr>
<td><strong>Trousers</strong></td>
<td>Loose fitting</td>
</tr>
<tr>
<td><strong>Boots</strong></td>
<td>Heavy-duty, cut resistant or leather, laced, with nonskid soles and 6 inch-high or adequate ankle support</td>
</tr>
<tr>
<td><strong>First Aid</strong></td>
<td>OSHA-compliant kit, one with each saw crew</td>
</tr>
<tr>
<td><strong>Chaps</strong></td>
<td>Meets USFS or ASTM specifications, 2” Overlap at hem</td>
</tr>
</tbody>
</table>
First Aid Kit (PPE)

- OSHA-compliant (1910.266 App A)
  - Two large gauze pads (at least 8 x 10 inches)
  - Two elastic wraps
- PCTA Volunteer Injury Packet
- Each saw crew must have a first-aid kit
- OSHA Link (online only)
Job Hazard Analysis (JHA) & Supporting Documents

- Review JHA and highlight the main points
  - Utilize the local/project-specific hazards section
  - Everyone MUST sign the JHA

- Review Trailhead Communication Plan (TCP) & Emergency Action Plan (EAP)
  - Review communication device(s) and protocol

- www.pcta.org/volunteer/crew-leader-center (online only)
Sawyer Safety Procedures

- **Operational Safety**
  - Apply OHLEC planning logic to improve safety

- **OHLEC**
  - **Objective**
  - **Hazards/Obstacles**
  - **Leans/Binds**
  - **Escape Routes**
  - **Cut Plan**
Operational Safety

- Saw operations include, but are not limited to, bucking, brushing, limbing
- Sawyers have the obligation to say "NO" and walk away from any situation they determine to be an unacceptable risk
- Saw only if safe
OHLEC: Objective

- Develop an Objective for the cutting operation
- The Objective is a very iterative process during a bucking operation
- “Where do you want the cut piece when finished?”
  - Determine cut piece track for log segments
  - Determine sequence and direction of limb removal
  - Determine how brush will be removed and disposed
OHLEC: Hazards & Obstacles

Develop a plan to identify the Hazards & Obstacles in the cutting operation

- Overhead – Widow makers, dead trees, leaners, loose bark, snags
- Upslope & downslope
- Both sides of log
- Bearing points
- Pivots
- Root wads
- Spring poles
- Limbs & branches
- Rotten wood
- Foreign objects
- Bees & poisonous plants
- People & animals
- Buildings, property & equipment
**OHLEC: Leans & Binds**

- Determine the binds in the log to be bucked, and in the limbing and brushing
- Predict binds based on bearing points and lie of log
- Determine the binds in the spring poles
- Determine how the binds will change during the cutting operation
- Determine the reactionary forces when the log is cut
**OHLEC: Escape Routes**

- Determine the “good” and “bad” side of the cutting operations

- Identify the escape route and safety quadrants, and safe zones for crew
  - Determine the safe area to work and clear the escape route if needed
  - Determine the safe area for the saw crew
  - Determine safety quadrant for each sawyer when double bucking
OHLEC: Cut Plan

- Develop the cut plan for the cutting operation
  - Determine the cutting sequence
  - Determine the type of cuts required
  - Determine what types of supports or prep will be required to move cut pieces
  - Communicate plan to saw crew
  - Assign tasks to the saw crew and swampers
Operational Complexity

- **Objective**
  - Static

- **Environment**
  - Dynamic

- **Human Factor**
  - Dynamic

- **Wood Fiber**
  - Static
Operational Complexity

Reassess the Objective to change the sawyer and the environment variables to align with sawyer ability and qualification.
Human Factors Video
## Hazard Mitigation: Complexity

<table>
<thead>
<tr>
<th>Objective</th>
<th>Full time to late fall</th>
<th>Task Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inundation</td>
<td>Full time to late fall</td>
<td>Low</td>
</tr>
<tr>
<td>Landslides</td>
<td>Full time to late fall</td>
<td>Moderate</td>
</tr>
<tr>
<td>Rockslides</td>
<td>Full time to late fall</td>
<td>High</td>
</tr>
</tbody>
</table>

### Hazards

- **Inundation**
  - Other tree growth in spring
  - Cutting down trees
  - Rockslides - cut, added, rock, windfall
  - Stream in narrow areas

- **Landslides**
  - Type: earth
  - Side: to side
  - Size: small

- **Rockslides**
  - Size: large
  - Rock type: sandstone

### Escape Paths

- **Side**
  - Side to side
  - Size: small

### Cutting Plan

- **Inundation**
  - Width: 30-60 ft
  - Depth: 10-20 ft

- **Landslides**
  - Severity: moderate

- **Rockslides**
  - Severity: high
## Hazard Mitigation: Complexity

### Hazard Ranking Guideline

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>16&quot; and under</th>
<th>24&quot; and under</th>
<th>Above 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Diameter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side Bind</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>Top/Bottom/End Bind</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>Slope</td>
<td>Level</td>
<td>10%</td>
<td>Above 10%</td>
</tr>
<tr>
<td>Single Log</td>
<td>On Ground</td>
<td>3' above Ground</td>
<td>Over 3' in the air</td>
</tr>
<tr>
<td>Stacked Logs</td>
<td>On Ground</td>
<td>Suspended</td>
<td>On Slope</td>
</tr>
<tr>
<td>Other hazards</td>
<td>None</td>
<td>Pivots, Root Wads, not affected by cutting sequence</td>
<td>Root Wads, Pivots, other hazards</td>
</tr>
</tbody>
</table>

Increasing Complexity
Hazards: Blow Downs Video
Hazards: Spring Poles Video
Hazards: Spring Poles Video
Situational Awareness

Stop. Reevaluate.