Summary:
The intent of this unit is to serve as an introduction to the 10 Standard Firefighting Orders, 18 Watch Out Situations, Common Denominators of Fire Behavior on Tragedy Fires, and their connectivity to Lookouts, Communications, Escape Routes, and Safety zones (LCES).

Incident Position Description (IPD) Alignment:
This unit aligns with the following FFT2 IPD specific duties (https://www.nwcg.gov/positions/fft2/position-ipd):

- Establish Lookouts, Communications, Escape Routes, and Safety Zones (LCES) before they are needed, according to IRPG guidance.
- Apply the Standard Firefighting Orders and Watch Out Situations to your assignment, as stated in the IRPG.
- Use Look Up, Down and Around in the IRPG to help maintain situational awareness. Adjust actions accordingly.

Objectives:
Students will be able to:

- Describe the 10 Standard Firefighting Order and provide examples of their application.
- Describe the 18 Watch Out Situations and provide examples of their application.
- Identify the common denominators of fire behavior on tragedy fires.
- Define Lookouts, Communications, Escape Routes, and Safety Zones (LCES) and describe factors that influence escape time and safety zone size.
- Describe how LCES is related to the 10 Standard Firefighting Orders and 18 Watch Out Situations.
- Identify elements of Risk Management in the Point Fire case study.

Unit at a Glance:

<table>
<thead>
<tr>
<th>Topics</th>
<th>Method</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Standard Firefighting Orders</td>
<td>Presentation</td>
<td>20 Minutes</td>
</tr>
<tr>
<td>18 Watch Out Situations</td>
<td>Presentation</td>
<td>30 Minutes</td>
</tr>
<tr>
<td>Common Denominators</td>
<td>Presentation</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>LCES</td>
<td>Presentation</td>
<td>15 Minutes</td>
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</tbody>
</table>
### Materials:

- Notebook for participants.
- S-130 Student Evaluation Task Sheet.
- Ability to display images and video on large screen.
- White board or easel access for group breakouts.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
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<tr>
<td>Safety Zone and Escape Time Presentation</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>Point Fire Case Study Presentation</td>
<td>30 Minutes</td>
</tr>
<tr>
<td><strong>Total Unit Duration</strong></td>
<td><strong>2 Hours, 5 Minutes</strong></td>
</tr>
</tbody>
</table>
Objectives

Students will be able to:

• Describe the 10 Standard Firefighting Orders and provide examples of their application.

• Describe the 18 Watch Out Situations and provide examples of their application.

• Identify the common denominators of fire behavior on tragedy fires.

Review unit objectives.
Students will be able to:

• Define Lookouts, Communication, Escape Routes, and Safety Zones (LCES) and describe factors that influence escape time and safety zone size.

• Describe how LCES is related to the 10 Standard Firefighting Orders and 18 Watch Out Situations.

• Identify elements of risk management in the Point Fire case study.

☑ Review unit objectives.
Pre-Video Discussion

- The 10 Standard Firefighting Orders are very useful tools to ensure minimized risk of injury during firefighting activities.
- Some home units may require firefighters to memorize the 10 fire orders. You do not need to memorize them for this class.
- They are on the cover of your IRPG, so you can reference them quickly when needed. Always keep your IRPG on your person.
- As your wildland fire career progresses, these orders should become muscle memory instinctively kicking in every time you engage a wildfire.

Play Video

- **Title** Standard Firefighting Orders
- **Summary** Introduction to the history and intent of the 10 Standard Firefighting Orders.
- **Time** (04:18)
- **Audio**

- Discuss fire behavior group:
  - When arriving at an incident, you need to know what the fire is doing and what it might do before establishing safety zones and escape routes:
  - #1. Keep informed on fire weather conditions and forecasts.
  - #2. Know what your fire is doing at all times.
  - #3. Base all action on current and expected fire behavior.

**Note to Instructor**
- This photo was likely taken in the morning. Note the drift smoke.
- Note the puff of smoke above the thermal belt on the left side of the image.
- Thermal belt/inversion can affect fire behavior as the burn period progresses.

Discuss fireline safety group:

- Once you know what the fire is doing, you have the information you need to establish your fireline safety.
- The fireline safety group comes next:
  - #4. Identify escape routes and safety zones and make them known.
  - #5. Post lookouts when there is possible danger.

**Note to Instructor**

- The firefighters in the image have a more than adequate size safety zone. Vehicles could fit in this safety zone.
- Firefighters appear calm and alert.

Discuss organizational control group:

- You know what the fire is doing and what it might do, escape routes have been identified, and lookouts posted.
- You are calm and alert.
- When prompt communication is established, clear instructions are given, and control is maintained:
  - #7. Maintain prompt communications with your forces, your supervisor, and adjoining forces.
  - #8. Give clear instructions and ensure they are understood.
  - #9. Maintain control of your forces at all times.

Review overall fire order intent:
- First, know what the fire is doing and what it might do (fire behavior group – orders 1 to 3).
- Second, escape routes have been identified and lookouts posted (fireline safety group – orders 3 to 6).
- Third, communication is established, and clear instructions have been given (organizational control group – orders 7 to 9).
- What’s left:
  - #10. Fight fire aggressively having provided for safety first.

Discuss that although in a list format, the intended use of the orders is not to check off 1 through 10 as you would a checklist, but to act as reminders of conditions that need to be continuously maintained and assessed throughout each operational period.
Pre-Video Discussion

- The original Watch Out Situations were introduced less than ten years after the 10 Standard Fire Orders were developed.

- Discuss that the Watch Out Situations are indications to personnel that if positive action is not immediately taken, you could endanger yourself or your crewmembers.

Play Video

**Title** Watch Out Situations

**Summary** This video is an introduction to the history and intent of the Watch Out Situations and a review of the watch outs.

**Time** (06:10)

**Audio**

**Note to Instructor**

Discuss that the intended use of the Watch Out Situations is to continually reassess situational awareness in an operational setting. It is not to check off 1 through 10 as you would a checklist, but to act as reminders of conditions that need to be continuously maintained and assessed throughout each operational period.
Note To Instructor
This slide is intended as an opportunity to introduce students to the Firefighting Orders and Watch Out Situations Immersive Activity available on the NWCG RT-130, Wildland Fire Safety Training Annual Refresher (WFSTAR) website: https://www.nwcg.gov/publications/training-courses/rt-130/operations/op820

The Immersive activity is designed as an opportunity for students to apply the 10 Standard Firefighting Orders and 18 Watch Out Situations in simulated fire scenarios.

The activity does require internet access. If that is not an option in the location the course is being facilitated, it is recommended that this slide serve as a reminder to take time to advise the students about them and how to access them. This can be an optional activity to conduct outside of class.

If internet access is not an issue in the classroom, directions on how to facilitate this activity are provided under Module Tools on the activity link provided.
Discuss background of Carl Wilson and the Common Denominators:

- Started his career with the Forest Service in 1946.
- From 1956 – 1972 he worked for the USFS Pacific Southwest Forest and Range Experiment Station as Chief of the Division of Forest Fire Research early on and then Assistant Director of the experiment station the last eleven years of his tenure.
- Carl C. Wilson is thought to be one of the original wildland fire researchers.
- In the late 1970’s Carl C. Wilson studied 67 fires between 1926 – 1976 which resulted in the deaths of 222 firefighters.
- He was looking for common themes contributing to these “fire-induced” fatalities.
- These themes became the Common Denominators of Fire Behavior on Tragedy Fires.
- The first four are Wilson’s originals and number five was added to the IRPG in 2018.


Discuss the five Common Denominators of Fire Behavior on Tragedy Fires:

- #1. On relatively small fires or deceptively quiet areas of large fires.
- Fires can transition from small, low complexity fires and become complex fires that can catch firefighters off guard.
- A fire in all phases, including Mop up, has the ability to rekindle and reignite, compromising the safety of the situation.
  - #2. In relatively light fuels, such as grass, herbs, and light brush:
- The western US has become dominated by annual grasses (cheat grass and medusa head grass). These and other fine fuels are the first to dry out and become readily available.
Annual grasses contribute to fine dead fuel moisture, a primary indicator of expected fire behavior as well as the primary carrier of the fire.

3. When there is an unexpected shift in wind direction or in wind speed:
   - Frontal passage, thunderstorm out flows, foehn winds, and diurnal wind shifts all cause change in wind direction or wind speed.

4. When fire responds to topographic conditions and runs uphill:
   - On average, when slopes reach 30 percent the fire rate of spread will double.
   - The rate of spread will double again when slope reaches 55 percent.
   - Canyons and steep drainages act like a chimney, funneling the fire up hill, drying and preheating available fuel making vegetation more readily available for volatile fire consumption.

5. Critical burn period between 1400 and 1700:
   - 2014 WFSTAR report: 19 of 26 separate fatality burnover incidents have occurred in this time period.
   - An average time from increased fire behavior to entrapment is 24 minutes.
   - Be within 10-15 minutes of an approved safety zone (adequate for number of people, expected fire behavior, surrounding fuels, etc.) during this critical burn period.
Pre-Video Discussion

- At the heart of the 10 Standard Fire Orders is Lookouts, Communications, Escape Routes, and Safety Zones (LCES).

- Paul Gleason produced the concept of LCES following his involvement on the Dude Fire near the Mogillon Rim in Arizona in 1990 where six members of an inmate crew lost their lives.

- Paul Gleason’s fire career spanned five decades. He coined the phrase “Be a student of fire”.

Play Video

Title LCES
Summary An introduction to the history and intent of LCES.
Time (03:19)
Audio

Post-Video Discussion


- Discuss each element of LCES following bulleted items in the IRPG.
  - “Lookouts need to be in a position to see both the objective hazard and the firefighters” lookouts are used for tree falling activities, steep terrain with rolling rocks and debris, air-tanker or helicopter drops, etc.

- LCES is not meant to replace the 10 Standard Fire Orders but work with them as a quick safety reminder of the essential Fire Order safety elements for crews progressing in the fire environment throughout each burn period.

Discuss factors that influence safety zone size:
- Survival does not depend on deploying a fire shelter.
- Surrounding fuel type and vegetation height.
- Radius equal to at least four times the flame length present.
- Wind speed and topography influencing radiant heat.
- Need to accommodate vehicles and equipment.
- The IRPG’s specific distance recommendations assume there is no slope and no convective heat transfer from wind.

Discuss variables that influence escape time:
- Based on the time needed for the slowest person to reach the safety zone.
- Fatigue and temperature factors as the shift/day progresses.
- Barriers that may increase travel time, such as topography, loose soils, rocks, and vegetation.
- Length of route as the crew progresses further along the fire perimeter and away from safety zone.
- Escape time versus the fire’s rate of spread (ROS)
- Proximity of vehicles to crew.

**Note to Instructor**
- Not all firefighters are created equal. Some travel on foot faster than others.
- Always consider escape time, the time it takes for all crew members to make it to a safety zone, when selecting escape routes.
- Determining when to seek refuge in a primary or secondary safety zone might not always be obvious. Reassess safety zone location as progressing along the fireline.
Point Fire Case Study

Note to Instructor
- Josh Oliver, one of the victims of the Point Fire, was in his first season. He represents the intended audience of this course.
- Encourage these first-year firefighters to be empowered not only to commit these topics to their mental slide show from the very beginning of their fire career but speak up or ask questions when they perceive something might be amiss.

Pre-Video Discussion
- Burnovers account for about 20 percent of fatalities during wildland firefighting operations.
- Firefighter fatalities are also attributed to factors not related to fire behavior. Factors such as aviation incidents, vehicle crashes, falling trees, rolling rocks, and heart attacks or other medical causes make up the majority of firefighter fatalities.
- Risk management applies to every aspect of our job even when we are not actively suppressing fires.

Play Video

Title Point Fire Revisited
Summary A case study of the Point Fire (Idaho, 1995).
Time (15:38)
Audio
Post-Video Discussion

- Ask the students, if they were Josh Oliver, what would they do in this situation? How would they handle this?
- Discuss that the Point Fire accident investigation identified communications as one of the contributing factors to the fatalities.
- Discuss why communication is identified in numerous places in fire education:
  - Fire Order #7
  - Watch Out Situation #7
  - ‘C’ in LCES
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