

# **Report of the Workforce Capacity Workgroup**

## **2004 Protection from Fire Program Review**

**Oregon Department of Forestry**



**Prepared by  
The Oregon Fire Program Review Workforce Capacity Workgroup  
and  
The Institute for Natural Resources, Oregon State University**

**September, 2004**

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## **Executive Summary**

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For a variety of reasons, the Oregon Department of Forestry (ODF) Protection from Fire Program is facing growing difficulties in maintaining an adequate wildfire workforce. The Workforce Capacity Workgroup was formed as part of the 2004 Oregon Fire Program Review. The goal of the workgroup was to review workforce capacity issues and recommend strategies to ensure that adequate numbers of qualified and experienced personnel are available to supervise and perform the essential tasks of the ODF Protection from Fire Program fire prevention and suppression system.

Issues were identified and recommendations made for each of the following **objectives**:

1. Review opportunities to ensure, enhance and support the continued use of local landowner and operator resources through establishment of appropriate Administratively Determined (AD) use and rates, qualification standards and provisions for training for local area deployment.
2. Review pilot projects and prototypes currently in place and make recommendations for improvement and expanded use of local overhead resources used at the district level on a statewide basis.
3. Review opportunities to enhance relationships and effective utilization of resources from rural fire departments, rangeland protective associations, Oregon National Guard, etc.
4. Review and modify as needed current policies and direction and make recommendations for effective utilization of contracted firefighting resources in addition to interagency agreements.
5. Review current policies and direct making recommendations for continued and expanded effective utilization of inmate firefighting crews.
6. Review current policies and direction to enhance ODF workforce for firefighting or fire support through sound policies, cost efficient training and fire overhead succession management.
7. Review and make recommendations for full utilization of the Northwest Wildland Fire Protection Agreement (Northwest Compact).

### *Workgroup Process*

Through several two-day meetings the workgroup and invited subject matter experts discussed each objective in detail. Specific workforce capacity issues facing the ODF Protection from Fire Program were identified. Recommendations were developed to ensure adequate numbers of qualified and experienced personnel to supervise and perform essential tasks in the ODF wildland fire prevention and suppression system.

Inasmuch as training is a key safety consideration when utilizing personnel in fire suppression activities, the workgroup focused on assessing training standards of and for all cooperator sources. Emphasis was placed on preserving and enhancing the contributions provided by industry and landowners to local fire protection and suppression.

This report summarizes specific workforce capacity issues that the Workforce Capacity Workgroup identified, and the 59 recommendations that the workgroup is submitting to the Oregon Fire Program Review Steering Committee. The report is organized into sections on *high*, *medium* and *low* priority recommendations.

Among the high priority recommendations, the workgroup identified five as being the most critical to address and implement as soon as possible.

### **HIGHEST Priority Recommendations**

1. Adopt the 8-hour Non-Agency Single Resource Boss Program as the statewide ODF standard for non-agency personnel.
2. Review and update the Protection Training & Certification Manual and require only the training, qualifications and fitness standards necessary for each Incident Command System (ICS) position.
3. Identify the critical shortage of ICS positions on a statewide level, and develop and implement a mitigation plan.
4. Strengthen and clarify the responsibility of all ODF employees to participate in the complete and coordinated protection system in an active or supporting role.
5. Provide adequate funding and staffing for effective administration of the Interagency Crew Agreement.

## **Background**

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For a variety of reasons, the ODF Protection from Fire (PFF) Program is facing growing difficulties in maintaining an adequate wildfire workforce. These reasons include:

- An aging wildfire workforce. Institutional firefighting knowledge and expertise is being lost when senior wildfire employees retire and recruitment has not kept pace with retirements
- Training and safety requirements that inhibit the agency's ability to recruit and retain non-agency human resources and retain senior agency staff
- Increasingly complex fire prevention and suppression responsibilities as wildfires have become larger and more severe in recent years, and WUI areas have expanded
- Diversification of ODF forest stewardship duties over time into several other areas besides wildfire protection in response to societal demands and change
- Reduction in the number of loggers working in the forests with decline in timber harvesting, particularly in eastside forests
- Reduction in the number of federal land agency personnel in the forests with decline in timber harvesting on federal lands

### *Retirements and problems with use and retention of experienced senior level staff*

The Protection from Fire Program workforce is aging, and recruitment to fill critical incident command, safety officer and fire investigator positions has not kept pace with retirement. In recent years, ODF has utilized experienced retirees on an interim basis to the great benefit of the agency, but this is not a viable long-term solution. Because senior wildfire staff positions require several years of experience and training, a more aggressive recruitment strategy is needed.

This issue is compounded by barriers to retention of remaining senior wildfire staff. The ODF has developed strong working relationships with rural fire departments and the USFS and BLM because of their key roles in Oregon's firefighting system. ODF has emulated these agencies' training, experience, and physical fitness standards for qualifying and certifying wildfire workers. However, ODF may need greater flexibility in defining qualification standards to retain and utilize the valuable institutional knowledge of experienced senior staff. For example, strict adherence to the National Wildfire Coordinating Group's (NWCG) Wildland and Prescribed Fire Qualification System (PMS-310-1) standards may limit ODF's ability to utilize certain highly experienced and sorely needed Incident Command personnel.

### *Increasing complexity of wildfire protection; diversification of ODF duties*

Wildfire protection was ODF's original mission. The Protection from Fire Program has evolved in response to social changes and increasing demands on forests, including rising numbers of wildland recreationists and concurrent growth in the number of human caused ignitions. Perhaps the most notable change in recent decades has been the rapid expansion of eastside and southwestern Oregon communities, especially WUI areas where community boundaries abut forest lands.

The ODF is charged by statute with protecting, in order; human lives, forest resources and then structures, but people moving to WUI areas often expect structural fire protection similar to what they experienced in cities. The presence of homes in forests complicates wildland firefighting by forcing agencies to adjust their tactics when these homes are

threatened. This is happening with increasing frequency. Adding to this complexity are hazardous fuel buildups and greater frequency of uncharacteristically severe fires in recent years. Severe fires and more complex suppression roles require greater workforce resources.

Protection from Fire remains the largest program within the ODF but over time the agency's role in forest stewardship has diversified into several other areas, including State Forest Management, Private and Community Forests and Resources Planning programs, all of which compete for human resources and workload allocation. This has also made it increasingly difficult for the agency to maintain a strong wildfire workforce.

*Maintaining non-agency workforce capacity: Challenges and opportunities*

ODF has a strong working relationship with Oregon's private timber industry, and a history of coordinating firefighting efforts with privately employed timber workers that dates back to the agency's inception. However, Oregon Occupational Safety and Health Division (OR-OSHA) as well as ODF training requirements are complicating ODF's ability to continue to utilize this non-agency workforce. Moreover, timber harvesting has declined on federal lands statewide and on central and eastern Oregon industrial forestlands. Thus, the pool of skilled loggers and federal forest workers that could assist with fire protection and suppression is much smaller today than in the past.

On a more positive note, other non-agency resources have become more available in recent years. More contract resources are available today than ever before. ODF has learned that rigorous oversight of private contractors is necessary to ensure compliance with contract provisions and cost effective use of these resources. ODF has also learned how to utilize other human resources such as inmate crews and the National Guard. The 1998 Northwest Wildland Fire Protection Agreement (NW Compact) provides a framework through which Pacific Northwest states and Canada may share resources to fight wildfires. Recommendations of the Workforce Capacity Workgroup will help strengthen these programs in the future.

## **Issues and Recommendations**

For each objective the workgroup examined and identified issues and barriers. Supporting recommendations under each objective were formed based upon consideration of these issues and barriers. The specific recommendations are listed below, by *high, medium* and *low* priority groups. (Because of this prioritization, the objectives do not appear in numerical order.)

Supporting reference documents are included in the Appendix section.

### **HIGH Priority Recommendations**

**Objective 1:** *Review opportunities to ensure and enhance the continued use of local landowner and operator resources through establishment of appropriate AD use and rates, qualification standards and provisions for training for local area deployment.*

**Objective 2:** *Review pilot projects and prototypes currently in use and make recommendations for improvement for the continued use and enhancement of local overhead resources at the district level on a statewide basis.*

**Issue: The ODF Protection Training and Certification Manual (PT&CM) currently requires that private landowners and equipment operators meet the same wildfire training qualifications as an ODF employee to be certified by ODF. This has constrained the use of valuable private industry human and equipment resources in some locations. Expanding the Non-Agency Single Resource Boss Program offers a way to safely and effectively utilize non-agency resources.**

#### *The 8-hour Non-Agency Single Resource Boss Program*

This program is a pilot training and certification package designed and presently being used to ensure that non-ODF personnel are able to participate in local wildfire suppression activities. The program documents and certifies relevant forest industry experience and provides additional training to establish non-agency Single Resource Boss certification that is equivalent to ODF certification. The Industrial Landowner Fire Suppression Training Committee was tasked with developing a course that would provide experienced personnel with enough training to safely and effectively work as a Single Resource Boss on a local district fire. The committee established strict guidelines for the presentation of course material and also for the certification/documentation process.

The course emphasizes the need for safety and communication, and fire behavior. A two-page certification form documents training and experience that non-agency personnel have acquired through years of experience in the woods and on prescribed fires. Each certification form is reviewed by the candidate's immediate supervisor and the District Forester/Manager for final approval. The committee is confident that utilizing the training certification form and presenting the pre-packaged course material will lead to a qualified Single Resource Boss.

Non-Agency Single Resource Boss course objectives include:

- Provide a recognized/accepted training program that will allow landowner/operator personnel to more effectively interface with ODF's complete and coordinated protection system.

- Provide a level of training that will allow non-ODF personnel to effectively manage single resources within the Incident Command System model.
- Provide training in fundamental fire behavior and suppression tactics.
- Increase knowledge of ODF safety requirements and awareness of local safety concerns.
- Maximize the effectiveness of the ODF complete and coordinated protection system.
- Recognize experience that non-ODF personnel have obtained through work experience but not officially documented through NWCG Wildland and Prescribed Fire System Guide, PMS 310-1, January, 2000 (310-1). This addresses the fact that 310-1 was not designed to capture non-ODF personnel training and experiences.

*Recommendations:*

- Update and adopt the 8-hour Non-Agency Single Resource Boss (SRB) Program as the statewide ODF standard for non-agency personnel. This system recognizes performance-based training and experience to qualify up to Single Resource Boss. Positions certified through this process are only available for local use and not for other agency dispatch. If the final course covers additional and critical information, a method needs to be developed for recognizing those that have received previous training. Our intent is that the Non-Agency SRB designation become equivalent to ODF certified SRB's, e.g.; DOZB = DOZB, but it is imperative that the non-agency trained DOZB only be used at the local area and on wildfires managed by ODF. Timeframe: This should be accomplished by December 2004.
- The Protection Training & Certification Manual (PT&CM) Chapter 9, page 3 needs to be changed to recognize the Non-Agency SRB program for certification and maintenance of landowner/operator resources. Timeframe: December 2004.
- Directives relating to Firefighter Safety Training (1-0-1-401) and Protection from Fire Training and Certification (1-0-1-250) should be combined and brought up to date to reflect adoption of the SRB program. The new directive should be general and rely on the PT&CM for specific policy guidance on firefighter qualifications. There needs to be clear and consistent policy and directives as to the allowable, appropriate and supported use of non-agency personnel. Timeframe: December 2004.
- The Incident Qualification System (IQS) database program should be updated to include non-agency-related certification. Non-agency personnel certification records need to be accessed by adjacent districts, to minimize duplications. Timeframe: December 2004.

**Issue: Training requirements for non-agency Task Force Unit Leaders and Division Supervisors (Overhead Line Personnel) are the same as ODF- must meet standards as indicated in PT&CM. Specific issues are the time and dollar commitments necessary to meet qualifications, and that once a worker is qualified, it is difficult to track and maintain currency.**

*Recommendations:*

- No change from current policy and direction. The workgroup concluded that existing training standards are adequate and necessary to meet safety needs.



- Completion of the S-290 Intermediate Fire Behavior course should be required to move to higher level Incident Command System (ICS) positions.
- Encourage non-agency cooperators to train their personnel to higher level ICS positions.

**Issue: Due to economics and changing demographics, land management objectives and activities in some areas of the state have changed. One result of these trends is reduced availability of non-agency landowner/operator firefighting resources (e.g. dozers, lowboys, fire tenders, fire engines, etc.) than have traditionally been utilized.**

*Recommendations:*

- Continue and expand programs similar to the Northeast Oregon District's Initial Attack Management System (IAMS) and Douglas Forest Protective Association's (DFPA) landowner activation program that pre-identify resources in critical areas to be on-call.
- ODF should work with the Emergency Fire Cost Committee (EFCC) to find ways to be able to pre-identify and arrange agreements with resources in advance to have them signed up, with costs pre-arranged and still be an Oregon Forest Land Protection Fund (OFLPF) eligible cost.
- Explore non-traditional resources where the traditional operator/landowner resources are no longer available. (Such as harvester/forwarder and excavator operators, general contractors and small woodland owners).
- AD rates need to be up-to-date and all-inclusive. Districts need to have the option to use AD rates to maximize local landowner resources (e.g. dozers, lowboys, tenders and engines).

**Objective 6:** *Review current policies and direction to maintain ODF workforce for firefighting through sound policies, cost efficient training and balanced fire overhead succession management.*

The workgroup discussed this objective in length, including where ODF is today and our vision for the future. In order to understand where we currently are, much discussion centered on our past, mandated changes and our working relationships with our federal partners.

**Issue: Some ODF employees seem to feel that involvement in the fire program is voluntary and some supervisors seem to be reluctant to require fire duty of non-program personnel. Reasons for this include:**

- Differing interpretations of requirements for ODF employee involvement in the fire program.
- Directive 1-0-1-250 dealing with fire training is not well known and there is confusion about whether it applies to all Fire Program personnel or all employees.
- The Protection Training and Certification Manual has not been formally presented to all ODF employees and is still not widely understood.

**-Orientation for new employees does not provide adequate exposure to the fire program and expectations of their role in the complete and coordinated fire protection system.**

*Recommendations:*

- Fire Program Orientation needs to be reviewed and specific training requirements need to be developed for all ODF employees to promote greater involvement in the fire program. Training needs to include an introduction to Basic Forest Law and Chapter 477.
- The fire duty responsibility statement that is in all ODF employee Position Descriptions needs to be reviewed to ensure employees' obligation to fire is clear.

**Issue: In recent years, ODF has filled some critical Incident Command System (ICS) and specialized fire investigation positions with retirees. This has worked well on an interim basis and greatly benefited the agency in times of need (e.g. 2001, 2002, 2003) but also appears to be an incentive to retire earlier, causing ODF to lose extensively trained employees and exacerbating personnel shortages.**

**There is no focused statewide effort to identify critical unfilled ICS positions, or to identify and recruit potential candidates and fill these positions. Districts could utilize IQS to identify these gaps but IQS records are not being kept current due to workloads and districts are not getting periodic IQS training. There is an immediate need to develop a long-term strategy to recruit and fill critical ICS positions including Fire Investigators, Fire Behavior Analysis (FBAN) and Safety Officers (SOF).**

**Retirees may still be needed, especially in multiple project fire events, but in less critical situations it may be more optimal for longer-term succession management and filling of shortage positions to focus on using retirees as mentors and coaches to help with career development of ODF personnel.**

*Recommendations:*

- ODF districts need to get IQS training. This will allow them to perform gap analyses, identify critical unfilled positions and identify candidates to move into these positions.
- Protection Program needs to identify critical unfilled positions (gap analyses) on a statewide level with assistance from ODF areas and districts. Gap analyses must take into account the districts' drawdown analyses. It is essential to develop an action plan by June 2005, to make sure that these priority positions are filled within a specified time frame.
- Review Safety Officer qualifications and determine if the current level of training and experience is necessary.
- Retirees need to continue to help with fire investigating in the short term. However, ODF needs to utilize them more in the coach/trainer/mentor role with ODF trainees, e.g. having a retired Fire Investigator coach an ODF investigator instead of taking the lead on a Type 1 investigation.

- Explore opportunities to place some commitment and restrictions on retirees hired as fire investigators. (Consider contract language in contracts for hiring retirees as fire investigators that would have a clause that restricts their involvement in outside investigations after contract terminates for five years).
- Explore incentive programs to retain employees with critical ICS position qualifications who are close to retirement. This is something the Executive Team and Human Resources should consider.

**Issue: All ODF programs have identified missions that require training. Specialized training in each program inhibits cross training and prioritization of which training each employee should attend to meet Fire Program mandates. Increasing employee daily workloads have put a strain on non-fire program personnel ability to participate in fire program training, both in supporting and direct fire line assignments.**

*Recommendations:*

- Executive Team should emphasize and declare that fire training (Basic Firefighter, Law I, II and Basic ICS) is a very high priority for all ODF employees to meet ODF's statutory obligations (ORS Chapters 477 and 526). It is understood/accepted that other workload objectives may not get accomplished.
- The ODF training program should be audited to assure that ODF is providing the fire training that is needed to meet statutory obligations.
- Executive Team should assure that training priorities are set to provide direction and support to managers.

**Issue: ODF collaboration with federal partner agencies has led to adoption of training standards that are hard to meet. ODF's Bureau of Land Management (BLM) contract stipulates that the state and its subcontractors must meet qualification and operational standards identified in the Wildland Fire Qualification Guide (NWCG 310-1. Strict compliance with 310-1 standards presents barriers to accomplishing the fire protection mission and developing personnel to fill critical unfilled ICS positions.**

**The workgroup consensus is that ODF-specific training, experience and physical fitness standards are needed. It is critical that our federal partners, other state agencies, the BLM and industry accept these standards. These ODF-specific standards are in accordance with the current NWCG Wildland and Prescribed Fire Qualification System Guide, PMS 310-1.**

*Recommendations:*

- Review and update the Protection Training & Certification Manual (PT&CM) and require only the training and qualifications that are necessary for each ICS position to enable ODF employees to safely and effectively perform the duties of these positions.

- Encourage managers to cross train their staff to maintain essential functions and allow interested employees to actively engage in fire management positions.
- Educate ODF employees to understand the differences between ODF training and certification standards and 310-1. This would be accomplished with an identified cadre to go to each district/program and provide training on the use and purpose of the PT&CM.
- Continue to use the PT&CM to specify ODF wildfire training, certification and currency standards. Specifically speak to positions for which we cannot meet qualification standards of the 310-1 (FBAN, air operation positions).
- Modify the current ODF/BLM contract (C.N. HAC032W00) by changing the wording in clause C.1.2.1, or revise this section in the next revision of the contract to accept ODF training and qualification standards.

**Issue: Current mechanisms to facilitate trainee experiences on fires are underutilized and likely not fully understood.**

*Recommendations:*

- Protection staff should distribute the latest information on the ICS Training Fund to cost share classroom training and incident trainee assignments by August 1, 2004.
- Executive Team should direct managers to make trainee assignments a high priority and to work with Protection staff to pre-arrange cost share and dispatch ordering.

**Issue: Potential loss of experienced firefighting personnel due to inability to complete and/or health risks associated with the ODF Work Capacity Testing Program, specifically the pack test that requires carrying a 45 lb pack for three miles in less than 45 minutes. For example, do Division Supervisors and Task Force Unit Leaders need to take this arduous test? This test may be too strict and may not appropriately measure physical ability as instructed by OR-OSHA.**

**There is uncertainty about how to measure fitness standards as dictated by OR-OSHA. Requiring doctor's physicals for employees over 40 would promote good health, and be good for ODF. It is also a way of measuring fitness to satisfy OR-OSHA needs.**

*Recommendations:*

- ODF should study and identify the fitness level (arduous, moderate, low, none) standard for all Protection from Fire Program funded positions and ICS positions used by ODF.
- The ODF Fitness Standards Policy should be revised to:
  - Provide District Foresters with authority to examine/measure their employee's abilities to perform their daily duties.
  - Allow supervisors to modify duties of an employee, to maintain position qualifications, as long as they are meeting district objectives.
  - Allow multiple processes, including physical examinations, for measuring fitness levels.

-Include a standard for “out of district” assignments for all ICS positions.

**Objective 4:** *Review current policies and direction and make recommendations for effective utilization of contracted firefighting resources in addition to interagency agreements.*

**Issue:** **The contractor firefighting industry is in danger of losing highly experienced crews because they are not getting enough hours to defray their training costs and to pay for more highly qualified people. Low bid, single year contracts are resulting in a number of inexperienced contractors getting the majority of the work.**

*Recommendations:*

- Continue to evaluate a “best value” and multi-year agreement. Best value contracts mean that experience, training, past performance and costs are all considered in evaluating the bid and order of dispatch.
- Consider ODF specific fire suppression contracts for 10-person initial attack/project work crews.

**Issue:** **Contract fire crews that ODF and other agencies rely on heavily during extended and project size fires are secured through an interagency agreement. Complex contract makes administration difficult (e.g. monitoring all pack testing annually). Also, some contractors are giving incorrect locations of crews in order to get more work. Funding has not been adequate to cover necessary contract administration and ensure compliance.**

*Recommendations:*

- Continue to provide funding and adequate staffing, enforce compliance and penalties for violating contracts and evaluate methods to strengthen remedies.
- Evaluate the user fees (\$60/crew-day to using agencies) and explore augmenting revenues by adding a vendor (crew contractors) fee to provide a more stable revenue source.
- Continue to evaluate crew performances and release crews that are not performing to contract specifications.

## **MEDIUM Priority Recommendations**

**Objective 3:** *Review opportunities to enhance relationships and utilization of resources from rural fire departments, Rangeland Protective Associations, Oregon National Guard and other organizations.*

The workgroup looked at other agencies and groups that we currently use as resources for Oregon's complete and coordinated firefighting system. The workgroup also discussed opportunities to utilize Oregon National Guard, Rangeland Protective Associations, Oregon Department of Transportation (ODOT), Oregon Parks and Recreation Department (OPRD), Oregon Department of Fish and Wildlife (ODFW), Department of Corrections (DOC) and other resources to assist in extended attack situations.

Rural Fire Departments (RFDs) across Oregon are used and relied upon heavily for both initial attack and extended attack fires. There is currently a need to address redundant training and develop bridge courses to fill the gap between standard structural training and interface fire training. Assisting the Oregon Office of State Fire Marshal (OSFM) with this effort will help assure the RFDs continue to be a strong partner for ODF.

**Issue:** Redundant and possibly excessive training requirements between wildland fire training certification and rural structural fire training certification. Department of Public Safety Standards & Training (DPSST) standards for the structural fire departments change frequently. No interagency coordination exists to identify equivalencies within structural and wildland curricula and instructor standards. ODF needs to ensure that "training creep" does not eliminate valuable RFD and other rural structural protection resources on large wildland fires.

*Recommendation:*

- Protection Staff should support structural fire services to establish bridge courses and equivalencies between their wildland-urban interface training curriculum and the wildfire-training curriculum. Timeline: Complete by Dec. 31, 2005

**Issue: Oregon Conflagration Act mobilization requirements stipulate a minimum three day commitment when resources are mobilized. Delays in structural resources arriving at Conflagration Act fires.**

*Recommendation:*

- Protection Staff should communicate with the Office of State Fire Marshal staff about possible negative impacts to workforce capacity relating to the 3-day commitment requirement. Explore the alternative to allow for one-day assignments initially, then longer term after first day.

**Issue: A concept exists among wildland and structural fire agencies (e.g. RFDs) and overhead that allows/directs structural resources to take tactical actions on major wildland fires. (NOTE: This is not intended to affect mutual aid and initial attack actions.) There can be misunderstandings and improper tactics when utilizing structural resources, so there is a need to ensure that "role creep" does not eliminate valuable RFD and other structural protection resources on large wildland fires.**

*Recommendation:*

- Clearly define roles for structural firefighting resources on wildland-urban interface fires and assure that wildland fire management agencies know, understand and utilize these resources accordingly.

**Issue: National Guard personnel are sometimes utilized for firefighting, but this is not officially recognized as part of their mission, so guard members must be trained by ODF prior to deployment on a fire. This is expensive, time consuming and takes crew bosses away from other duties (i.e. firefighting) while they conduct training.**

*Recommendations:*

- The State Forester, through National Association of State Foresters (NASF), should work with other states and jointly recommend that the National Guard's mission be expanded to include fire fighting, including annual readiness.
- Find ways to have crew fire training included into normal National Guard training. This would ensure that ODF does not need to train National Guard personnel just prior to assignment to a fire, saving costs and time associated with training.

**Issue: Rangeland Protective Associations are underutilized due to lack of funding, training, equipment, and the landowners' lack of trust of the government. This issue will be addressed primarily through the Protection Coverage Workgroup.**

*Recommendations:*

- Review policies and directives to assure that landowners' ability to fight fire on and threatening their lands is maintained.
- ODF should work with BLM at state and local levels to increase cooperation between federal agencies and existing rangeland associations. Support an ODF position funded by BLM to assist in the formation and development of rangeland associations.

**Issue: Identification and effective utilization of personnel from other agencies in emergency wildfire situations (ODOT, OPRD, USFS, etc).**

*Recommendations:*

- ODF Protection staff should enter into discussions with other agencies at the state level and address any issues/barriers so that ODF can successfully utilize other agency personnel in firefighting activities in a timely manner.
- ODF districts should build "pool lists" of individuals from other agencies in their local areas that express interest in assisting on fire assignments based upon their training/experience.

**Objective 5:** *Review current policies and direction and make recommendations for effective utilization of inmate firefighting resources.*

Oregon Department of Correction resources are a very important part of ODF's complete and coordinated protection system. Correctional facilities provide much needed manpower and logistical support for extended and project size fires. There is potential to increase the number of inmate crews available to support firefighting in Oregon, but doing so could conflict with the interests of fire crew contractors.

The workgroup discussed the need for increased coordination and communications between state agencies to utilize more inmates. The workgroup also discussed logistical support necessary to utilize corrections resources. A statewide physical fitness standard needs to be developed for inmate crews.

**Issue: The interagency contract fire crew community is concerned that inmate crews compete with them. This may become a larger issue in the future when/if the inmate program is expanded, as seems likely.**

*Recommendation:*

- Protection staff should keep the contract community updated on the rationale for, and status of the Inmate Program. If the number of inmate crew is projected to increase, let the contractors know up front and early on.

**Issue: Logistical support for inmate crews on extended attack fires. It is difficult for districts to provide for logistical support when a team has not been put in place. Need to consider ways to deal with feeding and showering facilities.**

*Recommendations:*

- Provide better information to districts concerning inmate logistical requirements.
- Update agreement with DOC so that inmate crews arrive with initial support for the first shift including water and food, etc.
- Districts need to pre-identify logistical facilities for short-term use of inmate crews.
- Protection staff should explore opportunities to provide logistical support for inmates including small kitchen and shower facilities. One simple solution would be to provide MRE's to the crews in advance, and or have a pilot program to provide equipment for serving meals for the intermediate fires. Consider utilizing older fire cache and FEPP equipment, such as old kitchens, old com trailers, etc. which can be converted to meet logistical needs. Also consider small contractors that can provide these services.

**Issue: There are currently two fitness standards for inmate wildfire workers in Oregon. The Dept. of Corrections (DOC) at South Fork certifies that inmates can fight fire. Powder River and Snake River do the Pack Test.**

*Recommendation:*

- ODF and DOC should jointly establish a fitness standard for inmate crews that perform suppression activities.



**Issue: A significant number of inmates are currently available at state and county levels and in other states. This number is likely to increase in the future. Inmate crews are currently underutilized by ODF, due primarily to difficulties with local coordination to get new inmate programs working. A higher level of organization/coordination work is needed to increase utilization of current and future inmate crews.**

*Recommendations:*

- ODF should increase the use of inmates to help meet fire fighting needs.
- ODF should seek budget authority for one statewide inmate resources coordinator position to perform the needed organization/coordination work at the state and county level.
- Protection staff should research feasibility of developing agreements to utilize inmates from California and Nevada during severe emergency situations.

**Issue: Forest Inmate Crew Coordinators are a missing component at a number of DOC sites, which limits ODF's ability to utilize inmate crews. Adequate numbers of wildfire qualified crew supervisors are not available for inmate crews.**

*Recommendations:*

- Pursue opportunities for full-time employment for ODF Forest Inmate Crew Coordinators (FICC) at DOC sites.
- Identify AD Crew Bosses to fill the need.
- Assist DOC to train and qualify their personnel as Crew Bosses.

## **LOW Priority Recommendations**

**Objective 7:** *Review and make recommendations for full utilization of the Northwest Wildland Fire Protection Agreement (Northwest Compact).*

This addresses our ability to secure resources through the Northwest Wildland Fire Protection Agreement, which allows ODF to obtain resources from Washington, Alaska, Idaho, Montana, and Yukon Territory, Northwest Territory, British Columbia and Alberta in Canada.

The consensus of the workgroup is that this agreement is working as intended and it is very valuable. We placed this objective as low priority since it needs no fix.

*Recommendation:*

- The workgroup supports ODF's continued participation in the Northwest Wildland Fire Protection Agreement.

## **Appendix A: Workforce Capacity Workgroup Membership**

Mike Robison, Chair	District Manager, Coos Forest Protective Association
Melvin Thornton	District Manager, Douglas Forest Protective Association
Dick Beeby	Roseburg Resources
Rex Storm	Associated Oregon Loggers
Ed Daniels	Oregon Department of Forestry
Tom Savage	Oregon Department of Forestry
Bob Young	Oregon Department of Forestry
Tom Lonie	Bureau of Land Management, Roseburg
Mike Dykzeul	Oregon Forest Industries Council
Randy Hereford	Starker Forests
Carl Gossard	U.S. Forest Service & Bureau of Land Management

**Appendix B: Local Resource Boss Industrial Employee Training**  
**Instructor's Manual**

# **Local Resource Boss**

## **Industrial Employee Training**

*Instructor's Manual*

Oregon Department of Forestry  
2005

**Contributors:**

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## Lesson Plan

Introduction:           **Local Resource Boss**

Suggested Time:       10 minutes

Objectives:            1. Welcome students and make introductions.  
                              2. Discuss classroom logistics.  
                              3. Introduce the course to the students.

Training Aids:         Computer projector, Power Point

Outline	Aids & Cues
<p><b>Introduction:</b></p> <ol style="list-style-type: none"><li>1. Welcome students and make introductions.</li><li>2. Discuss Classroom logistics (bathrooms, phones, breaks, lunch, etc.).</li><li>3. Introduce the course:</li></ol> <p>This course <b><u>WILL</u></b> give you the knowledge needed to supervise local resources on wildfires managed by ODF. These local resources include:</p> <ul style="list-style-type: none"><li>• Local Engine Boss</li><li>• Local Falling Boss</li><li>• Local Dozer Boss</li><li>• Local Ignition Boss</li></ul> <p>This course will <b><u>NOT</u></b> qualify anyone as a NWCG Wildland Single Resource Boss or any other ICS positions. It also does not meet the requirements for any of the NWCG Wildfire “S” courses.</p> <p><b>Purpose:</b></p> <p>The purpose of this course is to give Landowners, Forest Operators, and Forest Workers a better understanding of:</p> <p>Incident Fire Organization or ICS Fire Incident Communications Basic Fire Behavior – Seven Characteristics of Wildfire Fire Fighter Safety Fire Suppression considerations and tactics Air Operations on wildfires Operations in the Urban Interface Time Keeping</p>	<p>Unit 1, Slide 1</p>

## Lesson Plan

Unit 1: **Fire Organization - ICS**

Suggested Time: 60 minutes

Objectives:

1. Discuss the term “incident”.
2. Discuss the ICS structure.
3. Discuss “chain-of-command” and “span-of-control”
4. Discuss the general responsibilities of five sections in the Incident Command System.
5. Discuss the Incident Action Plan

Training Aids: Computer Projector, Power Point, & ICS chart handouts

Outline	Aids & Cues
<p><b>Purpose:</b> The Incident Command System is the organizational structure used when fighting wildfire. It is important to understand ICS structure and terminology to fit effectively into the fire fighting effort.</p>	Unit 1, Slide 2
<p><b>Objectives:</b> Discuss the term “incident”. Discuss the ICS structure. Discuss “chain-of-command” and “span-of-control”. Discuss the general responsibilities of five sections in the Incident Command System.</p>	Unit 1, Slide 3
<p><b>What is an incident?</b> An emergency response situation... structure fire search and rescue flood hurricane response hazardous material spill vehicle accident wildland fire</p>	Unit 1, Slide 4
<p><b>Small fire Organization:</b> Over 90% of wildland fires are suppressed with a small organization.  An Incident commander and the firefighters.</p>	Unit 1, Slide 5

**Chain of Command:**

This is the line of authority where decisions and recommendations are made and work assignments are given.

Command —————> Firefighter

**For Example:**

In a 20 person crew organization there is the crew boss, squad bosses, and the firefighters.

Unit 1, Slide 6

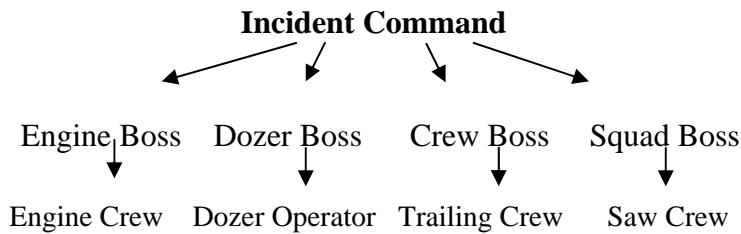
Unit 1, Slide 7

**Span-of-control:**

Some wildland fires require a management organization to maintain span of control.

Span of control refers to how many organizational elements may be directly managed by an individual.

The range for effective Span of Control is between 3 and 7, with 5 resources reporting being the ideal.



Unit 1, Slide 8

**Incident Command System – ICS**

Unit 1, Slide 9

**Command:**

Command has the overall responsibility and makes the decisions for the incident.

Unit 1, Slide 10

**Command Staff**

- Safety Officer
- Liaison Officer
- Information Officer

Outline	Aids & Cues
<p><b>General Staff:</b></p> <ul style="list-style-type: none"> <li>• Operation</li> <li>• Planning</li> <li>• Logistics</li> <li>• Finance</li> </ul>	Unit 1, Slide 11
<p><b>Operations Section</b> Where tactics and strategy are implemented. Operations is comprised of:</p> <p><b>Operations Section Chief</b></p> <ul style="list-style-type: none"> <li>• Division/Group Supervisor</li> </ul>	Unit, 1 Slide 12
<p>Much of Operations is geographically oriented. The fire is divided into divisions to make the operations more manageable.</p>	Unit 1, Slide 13
<p><b>Air operations</b> also works for the Operations Section, generally encompasses the entire fire, and is not limited to any one division.</p>	Unit 1, Slide 14
<p><b>Strike Team</b> Combination of the same kind and type of resources, with common communications and a leader.</p>	Unit 1, Slide 15
<p>In a Strike Team, Single Resources are all the same types of resources such as dozers, fallers, engines, tenders, crews, etc.</p>	Unit 1, Slide 16
<p><b>Task Force</b> Combination of single resources up to 5 assembled for a particular tactical need, with common communications and a leader.</p>	Unit 1, Slide 17
<p>Each resource has a Single Resource Boss</p>	Unit 1, Slide 18
<p><b>Single Resource</b> An individual firefighter, engine, dozer, water tender, crew, etc.</p>	Unit 1, Slide 19
<p>Safety requires that there must be a Supervisor for single resources.</p>	Unit 1, Slide 20
<p>Expectations for the Local Resource Boss include:</p>	Unit 1, Slide 21
<p>The Local Resource Boss reports to the Task Force or Strike Team leader if there is one.</p>	Unit 1, Slide 22
<p>Otherwise report to the Division Supervisor.</p>	
<p>Command Diagram</p>	Unit 1, Slide 23



Outline	Aids & Cues
<p><b>Planning Section</b>  The Planning Section documents and displays the approved strategy and tactics for the incident.</p> <p><b>Planning Section Chief</b></p> <ul style="list-style-type: none"> <li>• Resource Unit</li> <li>• Situation Unit</li> <li>• Documentation Unit</li> <li>• Demobilization Unit</li> </ul>	<p>Unit 1, Slide 24</p>
<p><b>Logistics Section</b>  Logistics provides the support and service for all incident personnel.</p> <p><b>Logistics Section Chief</b></p> <ul style="list-style-type: none"> <li>• Communications Unit</li> <li>• Supply Unit</li> <li>• Medical Unit</li> <li>• Food Unit</li> <li>• Facilities Unit</li> <li>• Ground Support Unit</li> </ul>	<p>Unit 1, Slide 25</p>
<p><b>Finance Section</b>  Finance processes payments, purchases, contracts, and provides cost estimates.</p> <p><b>Finance Section Chief</b></p> <ul style="list-style-type: none"> <li>• Cost Unit</li> <li>• Procurement Unit</li> <li>• Compensation/Claims Unit</li> <li>• Time Unit</li> <li>• Commissary</li> </ul>	<p>Unit 1, Slide 26</p>
<p><b>IAP</b>  When a fire requires a large management organization, planning becomes more complex.</p> <p>Information is disseminated formally through the development of an Incident Action Plan (IAP)</p>	<p>Unit 1, Slide 27</p>
<p>Valuable information for single resource supervisors can be found in the IAP.</p>	<p>Unit1, Slide 28</p>

Outline	Aids & Cues
<p><b>ICS – 202 Incident Objectives</b>  A quick look at the overall incident objectives is found on the 202 form in the front of the IAP.</p> <p>You will also find a brief weather forecast and general safety issues.</p>	<p>Unit 1, Slide 29  (202 Form)</p>
<p><b>ICS – 203 Organizational Assignment List</b>  The ICS-203 form displays the incident overhead positions and is usually the next page of the IAP.</p>	<p>Unit 1, Slide 30  (203 Form)</p>
<p><b>ICS – 204 Division Assignment</b>  The ICS-204 Division Assignment - lists the Division Supervisor and all the resources assigned to the division.</p> <p><b>* Explain the letter designator on the resource # (i.e. C-707 is crew 707) *</b></p> <p>Division specific objectives are also listed along with specific safety concerns.</p>	<p>Unit 1, Slide 31  (204 Form)</p>
<p>Communication frequencies are listed at the bottom.</p> <p>Each Division or Group has an ICS-204 form, with the division/group specific information.</p>	<p>Unit 1, Slide 32  Unit 1, Slide 33 (205 Form)</p>
<p><b>ICS – 205 Incident Radio Communication Plan</b>  The Incident Radio Communication Plan (ICS-205) lists the radio assignments for the entire incident.</p>	<p>Unit 1, Slide 34  (206 Form)</p>
<p><b>ICS – 206 Medical Plan</b>  The Medical Plan lists the first aid units and locations...</p> <p>Air and ground medical transport systems...</p> <p>Hospitals...</p>	<p>Unit 1, Slide 35</p>
<p>And procedures to follow in the event of an injury.</p> <p><b>Fire Behavior Forecast</b>  The Fire Behavior Forecast provides a forecast general to the entire fire and specific to the divisions of the fire.</p> <p>Tactical success and fire fighter safety is dependent on knowing and understanding this forecast.</p>	<p>(Fire Behavior Forecast)</p>

Outline	Aids & Cues
<p><b>Fire Weather Forecast</b>  The Fire Weather Forecast is also critical to firefighter safety and tactical success.</p> <p>Pay attention to critical information such as wind conditions, RH's and temperatures.</p>	<p>Unit 1, Slide 36  (Fire Wx Forecast)</p>
<p><b>Safety Message</b>  The safety message will alert you to the pressing safety issues currently on the incident.</p> <p>Be sure to pass this information on to the resources working for you.</p>	<p>Unit 1, Slide 37  (Safety Message)</p>
<p><b>Transportation Map</b>  The IAP will have maps attached to it or handed out with it.</p> <p>These will include transportation maps...</p>	<p>Unit 1, Slide 38  (Fire Map)</p>
<p><b>Fire Map</b></p> <p>Be sure to study your IAP...</p>	<p>Unit 1, Slide 39  (Fire Map)</p>
<p>And share it with the resources you are responsible for.</p>	<p>Unit 1, Slide 40</p>
<p><b>End</b></p>	<p>Unit 1, Slide 41</p>

## Lesson Plan

Unit 2: **Incident Communications**

Suggested Time: 15 minutes

Objectives:

1. Discuss local radio frequencies
2. Discuss correct radio terminology
3. Discuss proper radio procedure

Training Aids: Computer projector, Power Point, handout local radio frequencies

Outline	Aids & Cues
<p><b>Purpose:</b> It is essential to be familiar with local radio frequencies, correct radio terminology, and proper radio procedure when coordinating efforts on a wildland fire.</p>	Unit 2, Slide 1
<p><b>Objectives:</b> Discuss proper radio procedure</p>	Unit 2, Slide 2
<p><b>Radio Frequency</b> Communications is an essential component of wildland fire fighting.</p> <p>An awareness of available radio frequencies ensures the safe and efficient flow of vital information to everyone on the incident.</p> <p>If possible contact your supervisor first with vital information or requests. If not follow the chain of command</p>	Unit 2, Slide 3
<p><b>Large Fires</b> A fire cache radio system with multiple frequencies is used on project fires that require an incident management team.</p> <p>Look for the frequencies on the ICS-205 form in the IAP (incident radio communications plan)</p>	Unit 2, Slide 4
<p><b>Clear Text</b> Clear text uses no codes.</p> <p>Use clear text during radio communication.</p>	Unit 2, Slide 5
<p><b>End</b></p>	Unit 2, Slide 6

## Lesson Plan

Unit 3: **Fire Behavior**

Suggested Time: 60 minutes

Objective: Discuss the seven wildland fire environmental factors to monitor on the fireline and be able to recognize the indicators of these factors.

Training Aids: Computer projector, Power Point

Outline	Aids & Cues								
<p><b>Purpose:</b> To be effective and to maintain safety, it is essential to be able to identify the various factors related to fire behavior.</p>	Unit 3, Slide 1								
<p><b>Objective:</b> Discuss the seven wildfire environmental factors to monitor on the fireline and be able to recognize the indicators of these factors.</p> <p><i>Understanding fire behavior will enable you to understand the Fire Behavior Forecast provided at briefings and in the IAP.</i></p> <p><i>This will enhance tactical success and fire fighter safety.</i></p>	Unit3, Slide 2  Unit 3, Slide 3								
<p><b>Seven Wildfire Environmental Factors</b></p>	Unit 3, Slide 4								
<p><b>Fuels:</b></p> <p><b>Fuel Characteristics</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Moisture content</td> <td style="width: 50%;">Chemical content</td> </tr> <tr> <td>Loading</td> <td>Size and shape</td> </tr> <tr> <td>Horizontal Continuity</td> <td>Vertical arrangement</td> </tr> <tr> <td>Compactness</td> <td></td> </tr> </table>	Moisture content	Chemical content	Loading	Size and shape	Horizontal Continuity	Vertical arrangement	Compactness		Unit 3, Slide 5
Moisture content	Chemical content								
Loading	Size and shape								
Horizontal Continuity	Vertical arrangement								
Compactness									
<p><b>Moisture Content</b> The amount of water in fuel expressed as a percent of the oven-dry weight of that fuel.</p> <p>Fuel moisture, in living or dead fuel, plays a significant role in determining how quickly the fire will spread.</p>	Unit 3, Slide 6								

Outline	Aids & Cues
<p><b>Chemical Content</b> The presence of volatile substances such as oils, resins, wax, and pitch in the fuels affects the rate of combustion.</p>	Unit 3, Slide 7
<p><b>Examples:</b> Chaparral in the Southwest  Gorse in the Pacific Northwest  <b>(ask for other examples)</b></p>	Unit 3, Slide 8
<p><b>Fuel Loading</b> Large amounts of light fuels increases fire spread. Large amounts of heavy fuels increases the fire intensity.</p>	Unit 3, Slide 9
<p>Light fuels include leaves, grass, and shrubs. Heavy fuels include limbs, logs, and stumps.  <b>(Note: a little more on fuel size)</b></p>	Unit 3, Slide 10
<p><b>Surface Area to Volume Ratio</b> The ratio of the surface area of a fuel to its volume.</p>	Unit 3, Slide 11
<p>(Each example in this slide has the same volume. Splitting the cube into smaller pieces does not increase the volume, but does increase the surface area. The smaller pieces allow more air and heat around the volume increasing it's ability to burn. The smaller pieces have a higher <b>surface-area-to-volume ratio</b>.)</p>	Unit 3, Slide 12
<p><b>Horizontal Continuity</b> Horizontal continuity applies to all fuel complexes, but the greatest concern is fine fuels.</p>	Unit 3, Slide 13
<p>Continuous fuel provides an opportunity for fire to spread.  Patchy fuels require strong wind for fire to spread.</p>	Unit 3, Slide 14
<p><b>Vertical Arrangement</b> Fuel ladders can spread fire from the surface to aerial fuels.</p>	Unit 3, Slide 15
<p>Ladder fuels include brush, tree limbs, moss lichens, etc.</p>	Unit 3, Slide 16
<p><b>Compactness</b> This fuel characteristic is the spacing between fuel particles.</p>	Unit 3, Slide 17
<p>Fuels too closely compacted have less surface area exposed, restrict oxygen, &amp; inhibit convective and radiant heat transfer.</p>	Unit 3, Slide 18

Outline	Aids & Cues
<p>Loosely compacted fuels react faster to moisture changes and have more oxygen available for combustion.</p>	
<p><b>Fuel Moisture</b></p>	Unit 3, Slide 19
<p>Fuel Moisture content is the amount of water in a fuel, expressed as a percent of the oven dry weight of that fuel.</p>	Unit 3, Slide 20
<p><b>Fine Dead Fuel Moisture</b></p>	Unit 3, Slide 21
<p>For fire behavior predictions the 1-hour group (fine dead fuel) is the most useful timelag group.</p>	
<p>This is the group that will determine the start and spread of wildfire.</p>	
<p>1-hour fuels constantly change with the changes in relative humidity.</p>	
<p><b>Daily Relationship of Relative Humidity to Fine Dead Fuel Moisture</b></p>	
<p>The fine dead fuel moisture changes as the RH changes with a short timelag of an hour.</p>	Unit 3, Slide 22
<p>Divide the RH by five to get a rough estimate of fine dead fuel moisture.</p>	
<p>Personal Observation: <i>Do twigs and other fines bend or do they snap from dryness.</i></p>	Unit 3, Slide 23
<p><b>Droughts</b></p>	
<p>Long drought periods will cause large dead and down fuels to become available to burn.</p>	Unit 3, Slide 24
<p><b>Fuel Temperature</b></p>	
<p>High temperatures will increase the flammability of fine fuels.</p>	Unit 3, Slide 25
<p>Fuels in direct sunlight have increased temperatures, which lowers the fuel moisture levels.</p>	Unit 3, Slide 26
<p>Shaded fuels will have higher fuel moistures.</p>	
<p><b>Aspect</b></p>	
<p>Fuel temperatures are also affected by aspect.</p>	Unit 3, Slide 27

Outline	Aids & Cues
<p><b>Terrain</b></p> <p><b>Steep Slopes</b>  Fuels above the fire are in closer contact with convective and radiant heat.</p> <p>Downhill spotting is also a problem.</p> <p><b>Box Canyons</b>  Box canyons and chutes act like a chimney.</p> <p><b>Saddles</b>  Fire spread &amp; intensity increases in saddles.</p> <p><b>Narrow Canyons</b>  Radiant heat preheats fuels across narrow canyons.</p> <p>Spotting likelihood increases.</p>	<p>Unit 3, Slide 28</p> <p>Unit 3, Slide 29</p> <p>Unit 3, Slide 30</p>
<p><b>Weather</b></p> <p><b>Wind</b></p> <ul style="list-style-type: none"> <li>• Increases oxygen supply</li> <li>• Influences direction of fire spread</li> <li>• Dries fuels</li> <li>• Moves air heated by convection into more fuels</li> <li>• Cause spot fires</li> </ul> <p>Sources of strong, erratic, and gusty surface winds that create extreme fire conditions include:</p> <ul style="list-style-type: none"> <li>• Cold Fronts</li> <li>• Foehn Winds</li> <li>• Daily Slope winds</li> <li>• Thunderstorms</li> </ul> <p><b>Atmospheric Stability</b></p> <p><b>Unstable Air</b></p> <ul style="list-style-type: none"> <li>• Clouds grow vertically</li> <li>• Smoke goes up to high levels</li> <li>• Cumulus clouds develop</li> <li>• Gusty winds</li> <li>• Good Visibility</li> <li>• Dust devils &amp; Fire whirls</li> </ul>	<p>Unit 3, Slide 31</p> <p>Unit 3, Slide 32</p> <p>Unit 3, Slide 33</p> <p>Unit 3, Slide 34</p> <p>Unit 3, Slide 35</p>



Outline	Aids & Cues
<p><b>Dust Devils and Fire Whirls</b> Very Unstable    Intense Heating</p>	Unit 3, Slide 36
<p><b>The dangers include: spotting</b></p>	
<p><b>Stable Air</b></p> <ul style="list-style-type: none"> <li>• Clouds in layers</li> <li>• Stratus type clouds</li> <li>• Smoke drifts apart</li> <li>• Poor visibility</li> <li>• Fog layers</li> <li>• Steady winds</li> </ul>	Unit 3, Slide 37
<p><b>(Note: Instructor may want to discuss the Haines Index)</b></p>	
<p><b>Thermal Belt</b> A nighttime phenomenon, thermal belts occur on the mid-portions of slopes in canyons.</p>	Unit 3, Slide 38
<p><b>Inversion</b> When air temperatures increase with elevation it is known as an inversion. Inversions generally take place at night and early morning and can present hazards as well as advantages to fire fighters.</p>	Unit 3, Slide 39
<p>Under an inversion, fire behavior may allow more aggressive fire control tactics.</p>	Unit 3, Slide 40
<p>Pay attention as the inversion begins to lift &amp; the air becomes unstable.</p>	
<p>Fire behavior may change abruptly.</p>	
<p><b>Fire Behavior</b> The final Environmental Factor is the current behavior of the fire. There are indicators that help you determine what to anticipate in fire behavior.</p>	Unit 3, Slide 41
<p><b>The Column</b></p>	Unit 3, Slide 42
<p><b>Leaning</b> - Typical of wind driven fire. Anticipate a rapid rate of spread and short range spotting.</p>	
<p><b>Sheared</b> - Winds aloft may cause long range spotting.</p>	Unit 3, Slide 43

Outline	Aids & Cues
<p><b>Plume Dominated</b> – The power of the fire overcomes local winds. There can be intense burning and fire spotting in any direction. The dangers include down burst similar to thunderstorms.</p>	Unit 3, Slide 44
<p><b>Changing Column</b> - The column changes color or splits and rotates faster.</p>	Unit 3, Slide 45
<p><b>Torching</b> – This is not a crown fire, but the fire may be transitioning from a surface to aerial fire.</p>	Unit 3, Slide 46
<p>Smoldering Fires Picking Up - <b>resulting from inversion lifts or the temperature rising in the hot afternoon.</b></p>	Unit 3, Slide 47
<p><b>Firewhirls</b> – resulting from unstable weather and/or intense heating from the fire. There is a high spotting potential from firewhirls.</p>	Unit 3, Slide 48
<p>Show Video: Look Up. Look Down. Look Around.</p>	Unit 3, Slide 49
<p><b>End</b></p>	Unit 3, Slide 50

## Lesson Plan

Unit 4: **Firefighter Safety**

Suggested Time: 30 minutes

Objectives:   
 1. Discuss “Situations That Shout Watchout”.  
 2. Discuss “Standard Firefighting Orders”.  
 3. Discuss the meaning of “LCES”.

Training Aids: Computer projector, Power Point, Standard Firefighting Orders & 18 Watchout Situations handouts

Outline	Aids & Cues
Title Screen	Unit 4, Slide 1
<b>Purpose:</b> Hundreds of firefighters have died fighting wildfires in this country.  Each year fires seem to be getting bigger and more destructive.  Yet it is often small or seemingly quiet fires that kill firefighters.  It is important for firefighters to learn the hazards involved in wildfire and the steps to fight fire safely.	Unit 4, Slide 2  Unit 4, Slide 3  Unit 4, Slide 4  Unit 4, Slide 5
<b>Objectives:</b> 1. Discuss “Situations That Shout Watchout”. 2. Discuss “Fire Orders”. 3. Discuss the meaning of “LCES”.	Unit 4, Slide 6
<b>Situations That Shout Watchout</b>  1. Fire not scouted and sized-up. 2. In country not seen in daylight. 3. Safety zones & escape routes not identified. 4. Unfamiliar with weather & local factors influencing fire behavior. 5. Uninformed on strategy, tactics, & hazards. 6. Instructions & assignments not clear. 7. No communication link with crewmembers or supervisor. 8. Constructing line without a safe anchor point. 9. Building fireline downhill with fire below.	Unit 4, Slide 7

Outline	Aids & Cues
<p><b>Situations That Shout Watchout</b> (cont.)</p> <ol style="list-style-type: none"> <li>1. Attempting frontal assault on fire.</li> <li>2. Unburned fuel between you &amp; fire.</li> <li>3. Cannot see main fire, not in contact with someone who can.</li> <li>4. On a hillside where rolling material can ignite fuel below.</li> <li>5. Weather becoming hotter &amp; drier.</li> <li>6. Wind increases and/or changes direction.</li> <li>7. Getting frequent spot fires across line.</li> <li>8. Terrain &amp; fuels make escape to safety zones difficult.</li> <li>9. Taking a nap near the fireline.</li> </ol> <p><b>The 18 Situations indicate that there is serious danger to firefighters. This does not mean that fire-fighting activities must stop, but that additional measures may need to be made. To address this look to and follow the Standard Firefighting Orders.</b></p> <p><b>Standard Firefighting Orders</b></p> <ol style="list-style-type: none"> <li>1. Keep informed on fire weather conditions and forecasts.</li> <li>2. Know what your fire is doing at all times.</li> <li>3. Base all action on current &amp; expected behavior of the fire.</li> <li>4. Identify escape routes safety zones, and make them known.</li> <li>5. Post lookouts when there is possible danger.</li> <li>6. Be alert. Keep calm. Think clearly. Act decisively.</li> <li>7. Maintain prompt communications with forces, your supervisor, and adjoining forces.</li> <li>8. <b>Give clear instructions and insure they are understood.</b></li> <li>9. Maintain control of your forces at all times.</li> <li>10. Fight fire aggressively, having provided for safety first.</li> </ol>	<p>Unit 4, Slide 8</p> <p>Unit 4, Slide 9</p> <p>Unit 4, Slide 10</p> <p>Unit 4, Slide 11</p> <p>Unit 4, Slide 12</p> <p>Unit 4, Slide 13</p> <p>Unit 4, Slide 14</p> <p>Unit 4, Slide 15</p> <p>Unit 4, Slide 16</p> <p>Unit 4, Slide 17</p> <p>Unit 4, Slide 18</p> <p>Unit 4, Slide 19</p>

Outline	Aids & Cues
<p><b>LCES</b> LCES was developed to make firefighter safety simpler to remember, with the critical components included.</p>	Unit 4, Slide 20
<p><b>Lookouts</b> A trusted person posted in an advantageous location with communications. This person can watch the fire behavior, weather, and look for additional hazards. They should know where the escape routes are located in reference to the crew's location.</p>	Unit 4, Slide 21
<p><b>Communication</b> Communication should be established with lookouts, crew, supervisor, and adjoining forces. Use clear text and make certain everyone knows the radio frequencies being used. In the absence of radios, face to face or some other form of communication is required.</p>	Unit 4, Slide 22
<p><b>Escape Routes</b> Escape routes should be established before you need them. There should be at least two escape routes. Make sure everyone knows the escape routes and flag them if necessary. Avoid making escape route uphill when possible.</p>	Unit 4, Slide 23
<p><b>Safety Zones</b> A safety zone is an area to retreat to. It should be preplanned before you need it as a place to avoid being over run by the fire. You should not have to deploy fire shelters in a proper safety zone. <b>(Instructor's note: sometimes what was thought to be a safety zone turns out to be a deployment zone when the fire hits.)</b></p> <p>Examples of Safety Zones include: Mechanically cleared areas Lakes or ponds Meadows or rocky areas The "Black" (already burned area)</p> <p style="text-align: center;"><b>(Ask for class in-put)</b></p>	Unit 4, Slide 24

Outline	Aids & Cues
<p><b>IAP</b></p>	<p>Unit 4, Slide 25</p>
<p><i>Remember to check your IAP for safety instructions and notes.</i></p>	
<p>Starting with the General safety Message found on the ICS-202 form.</p>	
<p>Check Special Instructions on the ICS-204 form (Division Assignment List).</p>	<p>Unit 4, Slide 26</p>
<p>Be sure to check the daily Safety Message.</p>	<p>Unit 4, Slide 27</p>
<p><b>Show Fire Shelter Video</b></p>	<p>Unit 4, Slide 28</p>
<p><b>End</b></p>	<p>Unit 4, Slide 29</p>

## Lesson Plan

Unit 5:                   **Fire Suppression Tactics**

Suggested Time:       60 minutes

Objectives:            1. Discuss the critical elements of Size-up.  
                               2. Discuss developing a plan.  
                               3. Discuss implementing the plan.  
                               4. Discuss Mop-Up & Rehabilitation.

Training Aids:         Computer projector, Power Point

Outline	Aids & Cues
<p><b>Purpose:</b>            Fighting wildfire requires a good size-up of the situation and developing and implementing an appropriate plan.</p>	Unit 5, Slide 1
<p><b>Objectives:</b>            1. Discuss the critical elements of Size-up.            2. Discuss developing a plan.            3. Discuss implementing the plan.            4. Discuss Mop-Up &amp; Rehabilitation.</p>	Unit 5, Slide 2
<p><b>Size-Up</b>            Size-up is the first step in making a plan of action.</p> <p>What is burning and what is needed is determined from size-up.</p> <p>Size-up lets in-coming resources know what to expect.</p>	Unit 5, Slide 3
<p><b>Point of Origin</b>            Locate and protect the point of origin.  <b>(Note: The Oregon Department of Forestry is required by Oregon Law to attempt to recover firefighting costs so finding the cause of fires is very important.)</b></p>	Unit 5, Slide 4
<p><b>Size</b>            Estimate the fire size.</p>	Unit 5, Slide 5

Outline	Aids & Cues
<p><b>Fire Behavior</b> – What is the observed fire behavior?</p>	
<p><b>Smoldering</b></p>	Unit 5, Slide 6
<p><b>Creeping</b></p>	Unit 5, Slide 7
<p><b>Running</b></p>	Unit 5, Slide 8
<p><b>Crowning</b></p>	Unit 5, Slide 9
<p><b>Torching</b></p>	Unit 5, Slide 10
<p><b>Aspect</b> Is fire on the dry south or west aspects or on the moist north or east aspect?</p>	Unit 5, Slide 11
<p><b>Slope</b> Are the slopes steep? Is the fire near the top of the ridge or is it down near the bottom of the slope where it has greater spreading potential?</p>	Unit 5, Slide 12
<p><b>Smoke Column</b></p>	Unit 5, Slide 13
<p><b>Bent Column</b> - look for spot fires and fire spread in the direction of the smoke column.</p>	Unit 5, Slide 14
<p><b>Vertical Plume Dominated Column</b> - Look for spot fires and fire spread in all directions.</p>	Unit 5, Slide 15
<p><b>Fuel Type</b></p> <ul style="list-style-type: none"> <li>• Grass</li> <li>• Shrub</li> <li>• Timber Litter</li> <li>• Slash</li> </ul>	Unit 5, Slide 15



Outline	Aids & Cues
<p><b>Access</b> What is the best route of travel?</p>	Unit 5, Slide 16
<p>Is the route in accessible to all the resources or does there need to be an alternate route or a change of tactics?</p>	Unit 5, Slide 17
<p><b>Location</b> To aid the incoming resources get a legal description to the nearest 40 acres (quarter/quarter).  Notifying the district office of a Latitude &amp; Longitude will also work.</p>	Unit 5, Slide 18
<p>Use road numbers, road names, and mile markers to aid incoming resources.</p>	Unit 5, Slide 19
<p><b>Hazards</b> – notify incoming resources of hazards on site.</p> <ul style="list-style-type: none"> <li>• Railroads</li> <li>• Illegal HazMat dump sites</li> <li>• Power lines</li> </ul>	Unit 5, Slide 20
<p><b>Resources Needed</b> – Determine what resources will be needed.</p> <ul style="list-style-type: none"> <li>• Crews</li> <li>• Dozers</li> <li>• Engines</li> <li>• Air support</li> </ul>	Unit 5, Slide 21
<p><b>Develop a Plan</b> <b>A plan of attack needs to be developed</b> The plan may be a formal Incident Action Plan (IAP), developed by the planing unit.  Or a simple verbal plan of how to deploy the initial attack resources by Incident Command.</p>	Unit 5, Slide 22
<p><b>In an IAP find the general incident plans on the ICS-202 form</b></p>	Unit 5, Slide 23
<p><b>More specifically find the plan for your work area of the fire on the ICS-204 form (Division Assignment List).</b></p>	Unit 5, Slide 24

Outline	Aids & Cues
<p><b>Items to consider when developing a plan</b></p> <p>Direct or Indirect Attack</p> <p>Anticipated fire behavior</p> <p>What Resources are on scene?</p> <p>What is available?</p> <p>What is threatened?</p> <p>What needs to be protected?</p> <p>Is there time to meet the objectives?</p> <p>Firefighter safety and public safety must also be a part of the plan.</p>	<p>Unit 5, Slide 25</p> <p>Unit 5, Slide 26</p> <p>Unit 5, Slide 27</p> <p>Unit 5, Slide 28</p> <p>Unit 5, Slide 29</p> <p>Unit 5, Slide 30</p>
<p><b>Implementing the Plan</b></p> <p><b>Line Construction</b></p> <ul style="list-style-type: none"> <li>• Locate a safe anchor point.</li> <li>• Keep lines as straight as possible.</li> <li>• Avoid heavy fuel concentrations.</li> <li>• Utilize natural barriers when possible.</li> </ul> <ul style="list-style-type: none"> <li>• Plan for fire spread &amp; burnout.</li> <li>• All trails must be to mineral soil.</li> <li>• Trails should be cup trenched on the lower side of fires on slopes.</li> </ul> <ul style="list-style-type: none"> <li>• Places trails on the backside of ridges or the bottom of slopes.</li> <li>• Width should be 1 1/2 times the height of the fuel carrying the fire.</li> <li>• Fall snags near the fire trail.</li> </ul>	<p>Unit 5, Slide 31</p> <p>Unit 5, Slide 32</p> <p>Unit 5, Slide 33</p>
<p><b>Resource Use</b></p> <p>There are guidelines for when to use various resources.</p>	<p>Unit 5, Slide 34</p>
<p><b>Guidelines</b></p> <p>The Fireline Handbook (among other sources) chart guidelines for using various resources at differing flame lengths. (B-57 &amp; B-58)</p>	<p>Unit 5, Slide 35</p>

Outline	Aids & Cues
<p><b>(Note: how the flame lengths relate to resource capabilities.)</b></p>	Unit 5, Slide 36
<p><b>Flame Lengths</b> Measure from the base of the flame (not the ground) at the bottom to the average tip of the flames</p>	Unit 5, Slide 37
<p><b>Hand Crews</b></p>	Unit 5, Slide 38
<p>Flame lengths less than 4 feet</p>	
<p>Use hand crews when slopes are too steep and rocky for dozers.</p>	
<p>Hand crews can put in a scratch line if that is all that is needed...</p>	Unit 5, Slide 39
<p>...or cut a 3 or 4 foot trail with 5 to 10 foot throwback.</p>	Unit 5, Slide 40
<p><b>Mechanical Equipment</b></p>	Unit 5, Slide 41
<p>Flame lengths less than 8 feet.</p>	
<p>Dozers generally can construct line faster and cheaper than hand crews.</p>	
<p>Use dozers in heavy or brushy fuels.</p>	Unit 5, Slide 42
<p>On slopes no greater than 35% in most cases.</p>	
<p>Dozers can work well for running attack.</p>	Unit 5, Slide 43
<p>But keep dozers out of wet swampy soils.</p>	
<p>In interface areas watch for:</p>	Unit 5, Slide 44
<ul style="list-style-type: none"> <li>• Septic tanks</li> <li>• Gas lines</li> <li>• Underground power lines</li> </ul>	
<p><b>Safety:</b> Never work crews down slope of a dozer.</p>	Unit 5, Slide 45
<p><b>Engines</b></p>	Unit 5, Slide 46
<p>Flame lengths less than 8 feet.</p>	
<p>Engines are effective for mobile attack or as a stationary pumping platform.</p>	

Outline	Aids & Cues
<p>Engines work well for:</p> <ul style="list-style-type: none"> <li>• Initial Attack</li> <li>• Hot Spotting</li> <li>• Patrolling the fire line</li> <li>• Mop-up</li> </ul>	Unit 5, Slide 47
<p><b>Tenders</b></p> <p>Flame lengths less than 8 feet.</p> <p>Tenders are effective for moving large amounts of water in a short period of time.</p>	Unit 5, Slide 48
<p>Tenders fill engines and port-a-tanks used by crews and helicopters.</p>	Unit 5, Slide 49
<p><b>Mop-Up</b></p> <p>Mop-up is the least exciting activity of fire fighting. Not doing it right, however, means having to return and re-fight the fire thought to be out.</p>	Unit 5, Slide 50
<p><b>Methods of Mop-Up</b></p> <p><b>Dry Mop-Up</b></p> <p>Burning materials are separated from the unburned and extinguished without using water. Then they are cooled with dirt and by exposure to open air.</p>	Unit 5, Slide 51
<p><b>Wet Mop-Up</b></p> <p>Separate burning materials from the unburned and extinguish using both water &amp; dirt. Dig out with hand tools then cool with water &amp; by exposure to open air.</p> <p><b>(Mop-up is most efficient when working with two or more people.)</b></p> <p><b>Systematic Mop-Up</b></p> <p>Work inward from control lines. Start with hottest &amp; work toward coolest.</p>	Unit 5, Slide 52
<p>Plan a beginning &amp; ending point. Grid the area.</p>	Unit 5, Slide 53
	Unit 5, Slide 54

Outline	Aids & Cues
<p><b>Detecting Hot Materials</b> Infrared cameras assist the mop-up effort in finding fire buried deep inside of heavy fuels or soil.</p>	Unit 5, Slide 55
<p>IR cameras are usually employed a few days after the mop-up phase, when hot areas are difficult to find.</p>	Unit 5, Slide 56
<p><b>Rehab</b> Begin by minimizing damage to the environment and property during fire fighting. Then be prepared, you may have to repair the damage caused by the fire suppression effort.</p>	Unit 5, Slide 57
<p><b>Repair fences</b> – cut fences rather than just driving through them.</p>	Unit 5, Slide 58
<p><b>Water bar fire trails</b> – to minimize erosion in the winter.</p>	Unit 5, Slide 59
<p><b>Re-seed trails</b> – be sure it meets with the landowners objectives first.</p>	Unit 5, Slide 60
<p><b>Smooth out dozer berms</b> – try to avoid burying hot embers in the first place.</p>	Unit 5, Slide 61
<p><b>Refill ponds</b> – in some cases it is the water needed for livestock.</p>	Unit 5, Slide 62
<p>Remember that the fire site is the landowner’s responsibility. Some of the rehab efforts will depend on landowner’s management objectives and are done by the landowner.</p>	Unit 5, Slide 63
<p><b>Unit 5 Exercise</b></p>	Unit 5, Slide 64
<p><b>End</b></p>	Unit 5, Slide 65

## Lesson Plan

Unit 6: **Air Operations**

Suggested Time: 30 minutes

Objectives:

1. Discuss airtanker use.
2. Discuss Helicopter use.
3. Discuss aircraft communications.
4. Discuss safety procedures when working in an area with aircraft.

Training Aids: Computer projector, Power Point

Outline	Aids & Cues
<p><b>Purpose:</b> Aircraft use is most effective during initial attack and when working in conjunction with ground forces. They are expensive and must be used wisely.</p>	Unit 6, Slide 1 Unit 6, Slide 2
<p><b>Objectives:</b></p> <ol style="list-style-type: none"><li>1. Discuss airtanker use.</li><li>2. Discuss Helicopter use.</li><li>3. Discuss aircraft communications.</li><li>4. Discuss safety procedures when working in an area with aircraft.</li></ol>	Unit 6, Slide 3
<p><b>Initial Attack</b></p>	Unit 6, Slide 4
<p><b>Airtankers</b> Airtankers are most effective during initial attack when the fire is small.  Often an airtanker will be diverted from a large fire to a new fire start.</p>	
<p><b>Retardant Considerations:</b> Do the values at risk justify drops? Does the fire behavior justify drops? Are there ground forces available for quick action? Will it be timely and effective? Is the weather and light conditions favorable?</p>	Unit 6, slide 5

Outline	Aids & Cues
<p><b>Types of Retardant Drops:</b></p> <ul style="list-style-type: none"> <li>• <b>Split drops</b> - partial load is dropped.</li> <li>• <b>Trail drops</b> - tanks are opened in sequence to form an unbroken line.</li> <li>• <b>Salvo drops</b> - tanks opened simultaneously and the entire load dropped at once.</li> </ul>	Unit 6, Slide 6
<p><b>Helicopters</b></p> <p>Helicopters can provide close-in support with water, foam, or retardant drops.</p>	Unit 6, Slide 7
<p><b>Air Support</b></p> <ul style="list-style-type: none"> <li>• Evacuate injured personnel</li> <li>• Transport personnel</li> <li>• Transport supplies</li> </ul>	Unit 6, Slide 8
<ul style="list-style-type: none"> <li>• Reconnaissance &amp; mapping\</li> <li>• Conduct burnout</li> </ul>	Unit 6, Slide 9
<p><b>Air Attack</b></p> <p>On large fires air attack provides coordination and communication for aircraft in the air and between the aircraft and the ground.</p> <p>Communication between the ground and air should begin with air attack.</p>	Unit 6, Slide 10
<p><b>Communication</b></p> <p>Ask arriving aircraft for assessment of the fire and let them know the objectives.</p> <p>Orient them to your location and where to make drop.</p>	Unit 6, Slide 11
<p><b>(Orienting Aircraft)</b></p> <ul style="list-style-type: none"> <li>• In general use cardinal reference points.</li> <li>• Orient the aircraft using “clock orientation”</li> </ul>	Unit 6, Slide 12
<ul style="list-style-type: none"> <li>• Use clear text when talking to aircraft</li> <li>• The communication plan in the IAP will list the air to ground frequencies</li> </ul>	Unit 6, Slide 13

Outline	Aids & Cues
<p><b>Safety</b></p> <p><b>Retardant/Water Drop Safety</b></p> <p><b>If you have prior warning:</b></p> <ul style="list-style-type: none"> <li>• Move out of the area.</li> <li>• Indicate your presence.</li> <li>• Remain clear of large old trees, snags, etc.</li> <li>• When drops are complete, move in quickly to take advantage of the drop.</li> </ul> <p><b>* When communications break down and the word doesn't get to the ground forces that a drop is going to be made and it is apparent you are going to be hit, there are a number of things you can and should do. *</b></p> <p><b>If you are going to be hit:</b></p> <ul style="list-style-type: none"> <li>• Lie down facing incoming aircraft.</li> <li>• Helmet, chin strap, and goggles on.</li> <li>• Feet spread apart for stability.</li> <li>• Tool to the side.</li> <li>• Get behind a tractor or a big rock if possible.</li> <li>• After the drop move out of the area until you are sure you are clear.</li> </ul> <p><b>Helicopter Safety</b></p> <ul style="list-style-type: none"> <li>• Approach or depart a helicopter from the front or side</li> <li>• Approach or depart on the downhill side</li> <li>• Approach or depart in pilot's vision</li> <li>• Use a chinstrap on your helmet</li> <li>• Carry tools horizontally, below waist level</li> <li>• Never throw items from the helicopter</li> </ul> <p><b>End</b></p>	<p>Unit 6, Slide 14</p> <p>Unit 6, Slide 15</p> <p>Unit 6, Slide 16</p> <p>Unit 6, Slide 17</p>



## Lesson Plan

Unit 7:                   **Operations in the Urban Interface**

Suggested Time:       60 minutes

Objective:               Discuss the issues and tactics involved in interface operations.

Training Aids:           Computer projector, Power Point

Outline	Aids & Cues
<p><b>Purpose:</b> With the increase presence of homes in forestlands, wildland firefighters must interact and work along side rural and city firefighters. A working knowledge of tactical procedures and other interface issues is a must for all firefighters.</p>	Unit 7, Slide 1
<p><b>Objective:</b> Discuss structural triage Discuss site preparation Discuss suppression activities Discuss “When it’s Hopeless” Discuss “Structural Watch Out Situations”</p>	Unit 7, Slide 2
<p><b>Structural Triage</b> There three structural categories</p>	Unit 7, Slide 3
Needing little or no protection	Unit 7, Slide 4
Needing protection, but savable	Unit 7, Slide 5
Hopeless	Unit 7, Slide 6
<p><b>Things to consider when triaging structures during urban interface fires...</b></p>	Unit 7, Slide 7
<p><b>Surrounding Fuel</b></p>	Unit 7, Slide 8
Age of fuels, loading, types of fuel, & hazards	Unit 7, Slide 9
<p><b>Defensible Space</b></p>	
Can an engine and crew safely defend the structure?	
The Structure	
Look at the structure itself and pay attention to likely ignition points.	

Outline	Aids & Cues
<p><b>The Structure</b></p> <p>Look at the structure itself and pay attention to likely ignition points.</p> <ul style="list-style-type: none"> <li>Roof</li> <li>Vents</li> <li>Decks</li> </ul>	<p>Unit 7, Slide 10</p>
<p><b>Hazards</b></p> <p>Common home and farm chemicals.</p> <ul style="list-style-type: none"> <li>Power lines</li> <li>LPG tanks &amp; other fuels</li> </ul>	<p>Unit 7, Slide 11</p>
<p><b>Suppression Activities</b></p>	<p>Unit 7, Slide 12</p>
<p>Contact with residents</p> <p><b>Advise fleeing residents:</b></p> <ul style="list-style-type: none"> <li>- to watch for emergency equipment on the road</li> <li>- the location of evacuation centers</li> </ul> <p><b>Advise residents who stay:</b></p> <ul style="list-style-type: none"> <li>- about escape routes and safety zones</li> <li>- about heavy equipment and aircraft in the area</li> <li>- where to watch for possible ignition spots</li> </ul>	<p>Unit 7, Slide 13</p>
<p><b>Access routes – look for:</b></p> <ul style="list-style-type: none"> <li>- adjacent fuels</li> <li>- one way or two way traffic flow</li> <li>- the slope of the road</li> <li>- people evacuating</li> <li>- power lines</li> </ul>	<p>Unit 7, Slide 14</p>
<p><b>Water Use</b></p> <ul style="list-style-type: none"> <li>- Effective water use is key to conserving your water.</li> <li>- Take every opportunity to add water to your tank.</li> <li>- Pre-wetting the structure is generally a waste of time and water.</li> <li>- Save it for the fire.</li> </ul>	<p>Unit 7, Slide 15</p>
<ul style="list-style-type: none"> <li>- Apply water in light fuels where you can do some good before the fire reaches the house.</li> </ul>	<p>Unit 7, Slide 16</p>

Outline	Aids & Cues
<p><b>When the Fire Hits</b></p> <ul style="list-style-type: none"> <li>- Avoid the temptation to flow water at the wall of flame.</li> <li>- Use water where it counts and not at the highest intensity.</li> <li>- Escape the heat by seeking refuge around or in the structure.</li> </ul>	Unit 7, Slide 17
<p><b>Foam Use</b></p> <ul style="list-style-type: none"> <li>- Pre-application of foam is useful.</li> <li>- Avoid applying foam more than 15 minutes before the fire hits if possible.</li> <li>- If there is time apply more than one coat.</li> </ul>	Unit 7, Slide 18
<p><b>When it's Hopeless</b></p>	Unit 7, Slide 19
<p><b>It's hopeless when:</b> The structure is within 1 or 2 flame lengths of the fuel... ...that the fire is making significant runs in.</p>	Unit 7, Slide 20 Unit 7, Slide 21
<p>Spot fires are igniting around the structure... ...or on the roof faster than you can put them out.</p>	Unit 7, Slide 22 Unit 7, Slide 23
<p>Your water supply will not allow you to continue fire fighting until the threat subsides.</p>	Unit 7, Slide 24
<p>You will not be able to remain at the structure and your escape route could become unusable.</p>	Unit 7, Slide 25
<p>The roof is more than ¼ involved and other structures are threatened.</p>	Unit 7, Slide 26
<p>Interior rooms are involved and other structures are threatened.</p>	Unit 7, Slide 27
<p><b>Structural Watch Out Situations</b></p>	Unit 7, Slide 28
<ol style="list-style-type: none"> <li>1. Wood construction and shake roofs.</li> <li>2. Poor access &amp; narrow one-way roads.</li> </ol>	Unit 7, Slide 29
<ol style="list-style-type: none"> <li>3. Inadequate water supply.</li> <li>4. Natural fuels 30 feet or closer to the structures.</li> </ol>	Unit 7, Slide 30
<ol style="list-style-type: none"> <li>5. Extreme fire behavior</li> <li>6. Strong wind 25 mph or higher</li> </ol>	Unit 7, Slide 31
<ol style="list-style-type: none"> <li>7. Evacuation of the public (panic)</li> <li>8. Structures located in chimneys, box canyons, narrow canyons, and on slopes of 30% or more.</li> </ol>	Unit 7, Slide 32

Outline	Aids & Cues
9. Continuous flashy fuels types 10. Bridge load limits	Unit 7, Slide 33
<b>* Remember: “No structure is worth a life”</b>	Unit 7, Slide 34
<b>End</b>	Unit 7, Slide 35

## Lesson Plan

Unit 8: **Time Keeping**

Suggested Time: 30 minutes

Objectives:

1. Discuss initial check-in
2. Discuss shift tickets
3. Discuss Demob

Training Aids: Computer projector, Power Point, & shift ticket handouts

Outline	Aids & Cues
<b>Time Keeping</b>	Unit 8, Slide 1
<b>Objectives:</b> Discuss initial check-in Discuss shift tickets Discuss Demob	Unit 8, Slide 2
<b>Check-In</b> It is essential to check-in on a fire assignment to maintain safety and accountability.  Check-in is also for time keeping and to secure payment when fire fighting is over.  During the initial stages of the fire, check-in may be on the line and made to the IC or Division Supervisor.  Check-in may be made at staging with the staging area manager.  On large complex incidents check-in is made in camp at the Resource Unit check-in table.	Unit 8, Slide 3       Unit 8, Slide 4       Unit 8, Slide 5       Unit 8, Slide 6
<b>Shift Tickets</b>  Time is recorded and tracked on fires using “Shift Tickets”.  Single resource supervisors must track the time of the resources they supervise as well as their own.	Unit 8, Slide 7

Outline	Aids & Cues
<p><b>Filling out the shift ticket:</b></p> <ol style="list-style-type: none"> <li>1. Enter your assigned division (A, B, C, etc.)</li> <li>2. Enter the shift you are working, day or night.</li> <li>3. Enter the name of the equipment OWNER.</li> <li>4. Enter Interagency Equipment Contract # or State Agreement # (if assigned) only.</li> <li>5. Enter the Resource Request Number (C-1, O-3, etc.) from your Resource Order Form.</li> <li>6. Mark what type of resource.</li> <li>7. Indicate yes or no as appropriate.</li> <li>8. Enter the name assigned to this incident by ODF.</li> <li>9. Enter the Number assigned to this incident by ODF.</li> <li>10. Record type of equipment (Dozer D-7, Engine 200 gal, Helicopter, etc.)</li> <li>11. List equipment's manufacture and model (i.e. Jeep, 4x4 Cherokee or Bell 212, etc.)</li> <li>12. List any remarks pertaining to this operator and or equipment, i.e. injuries, accidents, condition of equipment, working effectiveness of operator, suggestions, etc.</li> <li>13. Visible identification (owner # on door, etc.)</li> <li>14. Record license number of equipment, vin/serial number or tail number.</li> <li>15. Use this column to enter the date at the start of your shift. (MM/DD/YY)</li> <li>16. Circle unit of pay; Hours, Miles, Hobbs, or Days.</li> <li>17. Time equipment began shift if paid by hour/day, odometer, trip or HOBBS reading if not.</li> <li>18. Time equipment ended shift if paid by hour/day, odometer, trip or HOBBS reading if not.</li> <li>19. For all aircraft, enter the appropriate flight code from Air Operations control sheet.</li> <li>20. Operation/Personnel Name(s); Use this column to list the names of the personnel operating this equipment.</li> <li>21. Enter name of position being filled by person named, i.e. Eng. Op, Crew, etc.</li> <li>22. Enter the time in military hours when the person began work for the shift.</li> <li>23. Enter the time in military hours when the person ended work for the shift.</li> <li>24. Signature of personnel who's name is entered on # 20 verifying units worked by the equipment and by themselves.</li> <li>25. ODF representative's signature.</li> <li>26. Date of ODF representative's signature.</li> <li>27. Name of Timekeeper who finalizes posting.</li> </ol>	<p>Unit 8, Slide 8</p>

Outline	Aids & Cues
<p><b>Shift Ticket</b> (cont.)</p> <p><b>The white copy is for the Finance Section.</b> You will turn this copy into the task force leader, the strike team leader, or the division supervisor at the end of shift.</p> <p><b>The green copy stays with the supervisor.</b> You will turn this copy into the task force leader, the strike team leader, or the division supervisor at the end of shift.</p> <p><b>The blue copy is for your records.</b> Be sure to have your supervisor sign it at the end of each shift.</p>	<p>Unit 8, Slide 9</p> <p>Unit 8, Slide 10</p> <p>Unit 8, Slide 11</p>
<p><b>Demob</b></p> <p>When your assignment is finished, it is important to follow procedure when leaving the fire.</p> <p>Proper demob assures your safety, the return of equipment, and putting all your records in order.</p>	<p>Unit 8, Slide 12</p>
<p>Before leaving the incident the demob form picked up from the demobilization unit will need to be completed.</p>	<p>Unit 8, Slide 13</p>
<p><b>End</b></p>	<p>Unit 8, Slide 14</p>