



*Knowledge management is getting the right information to the right people at the right time.*

**In This Issue**

Page 1  
From AAR's  
to AAR Rollups

Page 2  
Engine Crews  
After Action Reviews

Page 5  
Practice Makes Perfect  
A Progressive Hoselay Drill

Page 6  
2003 Scratchline Survey

**Lesson Learned** – An innovative approach or work practice that is captured and shared to promote repeat application. A lesson learned may also be an adverse work practice or experience that is captured or shared to avoid recurrence.

**Best Practice** – A process, technique, or innovative use of resources, technology, or equipment that has a proven record of success in providing significant improvement to an organization.

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# From AAR's to AAR Rollups

**The After Action Review (AAR) Rollup is a tool** that can serve the information collection and distribution needs of you and your staff during the incident. The AAR can also supply much needed information to the Wildland Fire Lessons Learned Center in a timely way. The lessons and practices you provide the Center, we distill and distribute as knowledge products to the wildland fire community.

## After Action Reviews: Seizing the Chance to Learn

The AAR process has been successfully institutionalized in many military and private sector organizations. The interagency wildland fire community has also adopted the AAR as doctrine and conducting AAR's regularly has become standard operating procedure for capturing and disseminating critical organizational knowledge. Like many other organizations, the wildland fire community continually experiences learning that remains isolated, short-lived and trapped in the memories of individuals or separate units. The AAR begins a process that consolidates, distills, and disseminates knowledge throughout the entire community of practice through the Lessons Learned Center. At both organizational and individual levels, AAR's will help hone wildland fire skills, knowledge and abilities.

We are in the process of renaming the **After Incident Report (AIR) to an After Action Review (AAR) Rollup as part of providing you with this valuable tool.** The four question AIR, which came from the Army, is one way to elevate the knowledge captured at individual unit AAR's for organizational learning. The questions in the AIR (now called the AAR Rollup) are intended as a way to summarize the daily AAR's. The format for the daily AAR is found on page 16 of the Incident Response Pocket Guide (IRPG).

The AAR begins a process that consolidates, distills, and disseminates knowledge throughout the entire community...

Many operations personnel are beginning to use the daily AAR especially after receiving Fireline Leadership training. The daily AAR can also serve as a useful tool for all incident functions. These daily AAR's are designed to provide an internal learning opportunity for the individual unit. Many of you on larger incidents incorporate your lessons and practices from all your functional units into your report and this is extremely useful information. The intent of the AAR Rollup is to provide a formal method for providing that feedback to the entire organization.



The Lessons Learned Center recently facilitated an **AAR Rollup** with one of the Southwest Teams using the four-question process. The AAR Rollup works well as part of a closeout whether you are on a Type 1 or 5 incident. If you aren't already doing this, please consider using the AAR Rollup as part of your closeout protocol on incidents.

To view the AAR Rollup on line go to <http://www.wildfirelessons.net/AfrIncDntRpt.htm>. Please submit your AAR Rollups for all 2003 Type 1-5 incidents, wildland fire use, and prescribed burns. ★

## ENGINE CREWS

### After Action Review (AAR) Rollups

*Emergency Management Specialists consultant Bob Alvord and Guidance Group consultant Mike DeGrosky recently interviewed engine bosses, captains and crewmembers regarding their successes, challenges, training recommendations, and unresolved issues from recent fire seasons. Special thanks to these engine personnel for sharing their lessons learned and best practices with the wildland fire community.*

## Lessons Learned – Achieved Successes

### Useful Tool for Engine Crews

The National Wildfire Coordinating Group (NWCG) publishes the Incident Response Pocket Guide (IRPG), a field guide containing numerous references and job aids to assist wildland firefighters. On one Northwest forest, **all crews on a district use the IRPG as part of their daily work routine, and find that it contributes to their performance.** The district foremen report that they find the entire guide practical and helpful because it contains many useful references. For example, the district crews use the Size Up Report on every dispatch. The Size Up Report is on the inside cover where it is readily accessible and contains all the information an Initial Attack Incident Commander needs to gather information and report it once they arrive on the fire scene. The template in the IRPG prompts the user to collect complete size-up information including the incident name, incident commander, incident type, status, location, jurisdiction, size, fuel type, weather conditions, terrain, access, hazards and concerns as well as resource needs.

The district's crews also conduct tailgate After Action Reviews (AAR) following each incident. **The AAR is a post-shift crew debriefing method that helps crews learn from the day's actions and events.** By consistently using the AAR process on every dispatch, the district reinforces that the AAR process is not punitive, but a way to identify and make meaningful improvements



to their operation. The supervisors emphasize that the AAR should concentrate on what went right in addition to what should be improved. A brief, practical guide to conducting an AAR is on page 16 in the IRPG.

Another district uses the note pages at the back of the IRPG to list and define the terms and acronyms that they commonly use. Some engine foremen suggest common fire terms such as those associated with fire weather be included in the next update to the IRPG.

To view or download the IRPG, click on: <http://www.nwcg.gov/pms/pubs/pubs.htm>.

### Improvements to Radio Communications

Inadequate communication is often cited as a root cause of operational problems in wildland fire and other emergency functions. Like all firefighting units, engine personnel depend on reliable radio communications. On one forest, engine personnel noted that their forest's electronics technician has been very effective at improving radio communications, not only on their district, but also across the entire forest. Most of the improvements have resulted from attention to small details that have added up into significant, overall improvement in the communications system.

When the technician came to the forest in 2001, a scheduled radio equipment update had been initiated. However, due to the lack of qualified staffing, much of the old system had not been removed and nearly all of the antennas and feedlines in use on the system were still 1970's vintage. The technician and his assistant **methodically replaced old antennas and feedlines at every radio site on the forest.** The last old antenna and feedline were replaced in July 2003. Today, not a single antenna over two years old exists on any hilltop on this

forest. The forest's communication system received many enhancements, resulting in significant performance improvements, but the **antenna and feedline replacement effort made the single largest advance in system performance.**

This forest further improved the functioning of its radio communications system when they built two new radio sites to improve system coverage, and when they made the decision to use UHF links only where necessary to replace unreliable telephone control circuits. The forest also replaced previous temporary installations with permanent equipment, and new radio buildings were constructed at two district offices to properly house equipment. Additionally, the forest replaced all of the antennas at a site that acts as one district's control point for its repeaters. **Further enhancing performance, radio towers were replaced as needed, and new ones built at several sites.** All communications sites were inspected to ensure they were as clean and modern as practical.

Antenna and feedline replacements on the forest made the single largest improvement in radio system performance.

Another successful aspect of this forest's radio communications program is that the electronics technician occasionally monitors forest radio traffic so he can help field personnel improve their radio communications techniques and procedures. The technician's monitoring also enables him to identify potential system problems before they become operationally critical.

The forest's electronics technician makes the following suggestions regarding the use of handheld radios: **Users can improve their transmissions by holding the handheld radio in a vertical position, 3 to 4 inches from the user's face.** The microphones are designed to cancel noise from side sources, and reduce surrounding background noise. For best performance, anyone using a chest pack should use an external microphone to reduce the background noise level of their transmissions. Handheld radio performance also decreases dramatically when the antenna, including the

longer 1/4 wave antenna, is held too close to the body or in a position other than vertical. If a chest pack is used in an area of marginal coverage, it may be necessary to remove the radio from the pack to improve performance.

## Engine Access to Wildfires

**The ability of Oregon Department of Forestry to get close to fires with their 4WD 500-gallon (Type 6) engines has resulted in easier containment and control, and a reduction in acres burned.** The Department policy upon arrival at an incident is to locate the nearest water source and attack the fire from as close in as is deemed safe. The Department preference is to avoid the use of tractors or dozers for access, because of their concern about resource damage to private landowners' property and the potential delay of initial attack if the machinery is not readily available.

## Reduced Mechanical Problems

One district reports that they have experienced very few mechanical problems with their Type 6 engines during the past few seasons because they complete daily safety and maintenance inspections, supplemented by the services of an on-site mechanic when needed. **Each day the crews inspect the pump system, the fire equipment and the vehicle.** They also go through a pre-trip checklist to check out tires, horn, lights, etc. as well as to ensure the required support items are in place such as a fire extinguisher and first aid kit. The daily safety and maintenance inspection concludes with a road test to check brakes, steering and engine operation. To view a sample engine inspection checklist, click on: [http://www.wildfirelessons.net/Library/Safety\\_Health/ENGINE\\_INSPECTION\\_CHECKLIST.pdf](http://www.wildfirelessons.net/Library/Safety_Health/ENGINE_INSPECTION_CHECKLIST.pdf).

## Lessons Learned – Overcoming A Challenge

### Sharing Ideas

For firefighters at a remote district 22 miles from the nearest paved road, it is difficult to engage in much exchange of information and ideas with other



firefighters on a regular basis. Therefore, the district participates in an **interagency pre-season meeting with all the local cooperators**. This provides an opportunity to talk with personnel from cooperating agencies and share ideas on fire readiness, fire suppression, and ways to do the job better. Part of the pre-season meeting is devoted to demonstrating and explaining each other's engines and equipment so everyone becomes familiar with the various equipment and procedures. Each agency or unit also reviews their hoselay procedures. During fire season, firefighters in this remote district continue this exchange of information when they interact with cooperators on local fire assignments.

### Supplementing Agency Resources

As experienced by many departments, Oregon Department of Forestry finds itself occasionally hampered by a lack of personnel to meet suppression needs. Due to year-to-year engine crew staffing shortages, the Department **developed a program called the Initial Attack Extension Network (IAEN)**, providing a



means to better meet the agency's suppression objectives. During periods of high fire danger the state supplements their personnel resources by using trained and qualified local residents, state highway department personnel, and county employees to fill engine crew positions. The Department generally taps this network when additional personnel are needed to respond to lightning starts. The program proves particularly useful to activate engines lacking permanent staffing. People interested in participating complete a one-page application and must have received their employer's permission to participate. As part of the screening process, the Department tries to limit the training only to those persons they know will stay with the program and not leave after the State has made an investment in their training. For more information on the IAEN, contact Assistant Unit Forester Mitch Williams at (541) 963-3168.

## Training Curriculum Recommendations

### Engine Boss Training

Several engine personnel recommend that NWCG **separate the Crew Boss and Engine Boss task books**. They believe it is cumbersome and causes confusion having to complete different sections for each position, in addition to the portion of the task book that both a Crew Boss and Engine Boss are required to complete.

An engine contract company also suggests that S-215 "Fire Operations in the Urban Interface" be required in the Engine Boss training curriculum instead of at the Strike Team Leader level. In addition, this contractor suggests that the S-215 course needs a practical or skills exercise. A video simulation could precede the practical exercise but the current video alone is insufficient as an instructional tool. The company goes on to suggest that, if the class is taught near an urban interface setting, the training cadre could conduct the scenario exercise at a previously burned area

in or near a subdivision. If an onsite scenario were not possible, **S-215 instructors might use the new U.S. Forest Service 3-D Simulation program to enhance the course**. The 3-D Simulation software includes a scenario editor that allows the instructor to create or modify any scenario to meet learning objectives, and S-215 instructors can prepare an urban interface scenario requiring the trainees to triage structures in the path of a fire. For more information on the 3-D Simulation program select "Computer Based 3-D Wildland Fire Simulation Program" at: [http://www.wildfirelessons.net/Libr\\_Training.html](http://www.wildfirelessons.net/Libr_Training.html).

*Note – S-215 is in its final stages of revision. The revision will include more practical scenarios. The revised course will be available in January 2004. For the latest August 2003 list of NWCG course revisions and their status, select "Course Development/Revision Status" at: [http://www.wildfirelessons.net/Libr\\_Training.html](http://www.wildfirelessons.net/Libr_Training.html).*

### Toward a Cross-Functional Work Force

An engine boss noted that the standard wildland firefighter-training course (S-130/190) does not produce a very versatile or cross-functional firefighter. Consequently, many engine crews do not contribute effectively to handline construction efforts and other hand crew tasks, and Type 2 handcrews do not necessarily handle water well. The engine boss recommends that the **basic firefighter-training curriculum should be revised to**

## PRACTICE MAKES PERFECT PRACTICE MAKES PERFECT

### A PROGRESSIVE HOSELAY DRILL

98 Points Possible

**Objective:**

Demonstrate a progressive hoselay using a minimum of three packs.  
Use 300' of 1 1/2" hose, with 3 laterals of 100' each. Total distance out 400'.  
Live reel extended 100'. Provide a wet line from anchor point to end of drill.  
Spot fire optional, off the line or away from the engine.

**Condition:**

Slope - Moderate up slope  
Fuels - Light to medium

Possible 7 points per Item

**Comments:**

**Points**

1. Proper placement of engines \_\_\_\_\_
2. Captain gives clear instructions \_\_\_\_\_
3. Proper Personal Protective Equipment \_\_\_\_\_
4. Crew coordination at start \_\_\_\_\_
5. Report on Conditions \_\_\_\_\_
6. Protection of origin \_\_\_\_\_
7. Proper water use \_\_\_\_\_
8. Proper pump operation \_\_\_\_\_
9. Extension of hoselay \_\_\_\_\_
10. Hose coupling \_\_\_\_\_
11. Crew coordination derung hose lay/communications \_\_\_\_\_
12. Proper attack \_\_\_\_\_
13. Spot fire (optional) \_\_\_\_\_
14. Safety \_\_\_\_\_

**Total Points:** \_\_\_\_\_

Rater's Signature: \_\_\_\_\_ Captain's Signature: \_\_\_\_\_  
Date: \_\_\_\_\_ Date: \_\_\_\_\_

**emphasize preparing versatile and cross-functional firefighters** who can effectively perform the various responsibilities of both these line functions.

By the end of their initial training, firefighters should be able to effectively staff an engine, use hand tools to construct fireline, and participate as a member of a 20-person crew.

## Unresolved Issues

### Maximizing Ground Access For Engine Resources

The issue of engines gaining access to fires has been debated since engines were first used on fires. What engine initial attack IC doesn't want to get his or her engine as close to the fire as possible? Today, **many**

**public land roads have been closed, both physically and administratively for a variety of reasons.**

Land managers restrict access and close roads to protect threatened and endangered species, to prevent resource damage, to reduce litter and illegal dumping, to prevent illegal occupancy, reduce fire starts, and to save the cost of maintaining low-priority roads. However, many of these roads, whether built for timber harvest, to reach trail-heads, or to provide fire access have long enabled fire crews to get close to fires quickly. Many engine bosses desire increased access behind locked gates and other closures so that they may get engines close to the fire and improve their chances of catching the fire as rapidly as possible and keeping it small.

Land managers initially closed many roads with gates but members of the public who tear down posts, cut cables and shoot locks, illegally reopen many of these roads.

Consequently, when this closure method failed, managers began installing steep sided ditches, known as tank traps, and other installations to keep out all vehicles. However, inventive individuals have still found ways to access roads closed with tank traps and downed logs. Whether gates, downed logs or tank traps are used; these types of closures remain effective only if they are regularly patrolled and promptly repaired or replaced.

For engine personnel, the issue remains how to maintain official access to roads that provide important access to fires. Experience shows that land managers can maintain official access to some roads by employing innovative gate construction and siting, enhancing patrols, and by establishing an informed forest road user group. No simple answers exist for this issue. When making decisions about restricted access and road closures, **land managers must consider, along with many other factors, the occurrence and extent of fire starts in the area.** Each road closure should be made on a case-by-case basis. ★

# 2003 *Scratchline* Survey • Wildland Fire Lessons Learned Center

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*“There are some fire experiences that should not be demanded twice from anyone.”*

**Target Audience** - All operations positions that supervise others (squad boss, crew boss, engine boss, helicopter module leader, dozer boss, strike team leader, division supervisor, branch director, operations section chief).

The following questions are presented to you as a way of learning from your experiences. How you successfully handled a situation can teach others. Take a moment to think about what you can teach other firefighters.

Your Primary Operations Position \_\_\_\_\_

Number of Fire Seasons \_\_\_\_\_ and Fire Assignments \_\_\_\_\_ in this position in 2003.

1. Looking back on your experiences managing firefighters, in what situations did you feel that your supervisory skills were inadequate for the circumstances?

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- What training or experiences have you now received that would improve this situation?

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2. What training or experience have you received that prepares you for handling life threatening fire situations?

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- What have you learned about preparing for these life threatening situations that would teach others?

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3. How do you know you do your job well? What types of feedback have you received about your job performance and how useful was that feedback?

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4. What are the best ways fireline supervisors can improve their supervisory skills?

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\* We prefer that you complete this survey online at: <http://www.LLCsurveys.net>.

You can also FAX the completed survey to Lessons Learned Center at (520) 670-6413.

Thank you for your willingness to help others to learn. Surveys will be collected through December 31, 2003.