



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

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Visit the Lessons Learned Web site at <http://wildfirelessons.net/>

**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.

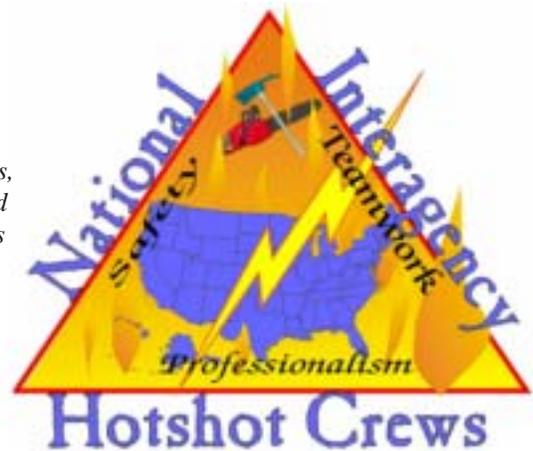
**Best Practice** – A process, technique, or innovative use of resources, technology, or equipment that has a proven record of success in providing significant improvement to an organization.

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# Hotshot Superintendents

*Lessons Learned After Incident Report (AIR)*

Numerous Hotshot Crew Superintendents were recently interviewed or completed AIRs regarding their lessons learned experiences from recent fire seasons. The AIR highlights their successes, challenges, training recommendations, and unresolved issues. Special thanks to the Superintendents for sharing these important lessons.



## Lessons Learned – Achieved Successes

### Demonstrating Effective Leadership

**Leadership training and one’s ability to demonstrate practical leadership under stress** has recently taken a critical step forward in the wildland fire community. This is primarily due to the new fire leadership program. This program includes actual operational implementation and utilization of technical skills that require a real world demonstration of their use along with leadership capabilities. This dynamic approach encourages supervisors and managers to show they can make dynamic decisions while still being in a monitored training environment. This is a significant improvement to the relatively static environment that existed during

previous classroom-only based training exercises that lacked actual consequences as a result of one’s decisions.

Until recently, if one was “paper qualified” and applied for a position, they were often assigned to the position, whether or not they had previously demonstrated their actual skill capacity or leadership abilities to perform the function. **Fire personnel are now encouraged to demonstrate their leadership and technical skills in a live incident environment.**

Consistency in application, continual practical training, and a realistic evaluation system that aids “improvement” to core competencies as the goal, are needed for this newly enacted leadership program to progress beyond the success of the initial implementation phase.



# LEADERSHIP

## *Developing Leaders In Wildland Fire*

The most essential element of successful wildland firefighting is competent and confident leadership. The wildland fire leadership development program has been established to provide an avenue for you to improve essential leadership skills during all stages of your career.

The Leadership Program components include:

- Values and Principles
- Leadership Toolbox
- Training Courses

To learn more about why the Hotshots and other fire personnel find this new program so valuable, click on <http://www.fireleadership.gov/>.

## Using Basic Tactics

A Hotshot Superintendent observed that his crew's greatest success in 2002 came from **adhering to the basics**. This crew found that applying the foundation of what is taught in basic firefighting is usually the most effective means of suppression. These "back to the basic" techniques are 1) locating an anchor point and flanking the fire, 2) direct attack where possible, or 3) indirect attack as near to the edge as fuels and topography allow.

The "back to basics" concept is grounded on what is occurring and anticipated in your immediate and adjacent work areas. This concept takes into consideration what changes in conditions may occur throughout the operational period. In most cases, this means that your local tactics may be different to a degree from what other crews are doing, but still adhere to the overall Incident Action Plan (IAP) parameters. An IAP usually contains what are generally broad in scope operational guidelines allowing for the utilization of a range of specific line building techniques. As you adjust your techniques to immediate local conditions, it is important to apply, but not exceed, your personal experience and expertise. Also, one must always keep in mind the overall incident strategy when using modified means of line building.

A reported combined example of applying firefighting basics and being dynamic is illustrated in a 2002 California incident. Fire behavior had been extreme since the fire started the previous day. The local Incident Management Team (IMT) felt that structure protection was the only tactic that could be fielded until additional suppression resources arrived.

On the second day, with this strategy in mind, a Hotshot crew was initially assigned to defensive action within the Division. Two Superintendents proceeded to

further discuss the IAP briefing and the potential fire behavior. The local Superintendent had extensive knowledge of the area and proved extremely helpful in identifying places where both Hotshot crews might anchor and begin work on a line. The two Superintendents then scouted the fire on the ground from the point of origin and identified to the resources specific places in which to attempt to anchor in. They initially experienced several false starts due to continuing extreme fire behavior.

In late afternoon this same day, the fire had lined up on a ridgeline perpendicular to a road, with favorable winds and lighter fuel loads. Giving consideration to these factors, and in coordination with the Division Supervisor, these two Superintendents then identified an access to an anchor point, as well as clean burn areas for their safety zones. This then permitted construction of a line that ran up the ridgeline to a rocky bluff. This piece of line was nearly completed prior to shift change. Night crews then assumed responsibility for this piece of line construction, finished it, and held it throughout the operational period. Subsequent operational periods on this piece of line became strictly mop-up and patrol.

While this piece of line was not a large section in relationship to the overall incident, every piece held makes the next day's goal more likely to be achieved. Here was an application of using both firefighting basics and being dynamic to the situation with the available resources. What occurred were multiple applications of a basic suppression technique, anchor and flank, through which the objective was successfully achieved. The Superintendents' demonstration of leadership skills in a dynamic environment also directly contributed to their ultimate line building success because they sought alternatives after their initial attempts were unsuccessful.

## Turn Down Protocols

**Awareness of how to properly refuse unsafe assignments** among crews has significantly increased within the wildland fire community. At the same time, fire managers must learn to recognize when they themselves are failing to adhere to established safety protocols in a changing fire environment. When firefighters and crews are put in a position where they feel they must turn down an assignment, it is generally because of a failure to adhere to safety protocols. It is every firefighter's right and responsibility to know how to state and document their reasons for using the turn down protocols.

**Individuals and crews may turn down an assignment as unsafe when:**

- **There is a violation of safe work practices**
- **Environmental conditions make the work unsafe**
- **They lack the necessary qualifications or experience**
- **Defective equipment is being used**

Until recently, there was a general mindset that only Hotshot crews were able to turn down or offer alternative means to accomplish assignments based on established safety criteria. Now, the entire community has a standard protocol and a way to present their concerns and alternatives. This “How to Properly Refuse Risk” protocol is outlined in the Incident Response Pocket Guide (IRPG) at [http://www.wildfirelessons.net/Libr\\_RiskMgt.html](http://www.wildfirelessons.net/Libr_RiskMgt.html).

An example of unreasonable risk refusal occurred on a large fire during the 2000 season. An IMT requested five separate Hotshot crews to complete an unsafe indirect frontal assault down a ridge. The five Hotshot crews repeatedly turned down the initial assignment and offered alternatives. The Hotshot crews were subsequently criticized by overhead, including over the radio, for having “unfounded safety concerns.” The viable practical alternatives offered by the Hotshot crews were not given consideration and dismissed as unacceptable. Five contract crews subsequently expressed that they felt they were then “forced” to take the assignment. The contract crews were all reported as stating they felt they had to take this inherently dangerous assignment because if they refused any assignment as contractors, word would get out, and thus jeopardize their ability to get future work.

**A monitoring system needs to be established to ensure that the written turn down standards are being properly used among all types of crews.**

Division Supervisors, Branch Directors, Operations Sections Chiefs, and other overhead also need to ensure they are making sound decisions on crew assignments based on the most current and expected fire behavior.

**voices heard and ideas expressed.** This also builds team cohesiveness and eliminates the complacent attitude of expecting someone else to speak on your behalf when concerns arise.

## Operational Briefings

A most difficult challenge to overcome is **getting resources to the line in a timely manner in order to communicate with line overhead**, noted two Superintendents. On many large incidents briefings last nearly an hour. By the time the briefing is over and crews reach their assignment location, some prime work time is lost.

We need to remember that the information given at the briefing is important but it serves as only a guideline. Objectives set by the IMT provide an outline of what is to be accomplished. Personnel can best discern the specific objectives of the work assignments once they are at the fireline. The goal should be to obtain the briefing information quickly, take it out to the Division, and see how it works on the ground. Once at the work location, discuss any needed modifications to the plan with the Division and finalize tactics that can be used to get the job done safely. Clear and open communication with all Division resources is imperative for success in this environment.

Likewise, operational debriefings at the end of each operational period contribute to the Planning Section receiving the most current fire information that includes situational changes.

## Transporting Crew Rigs

A Southern Area Hotshot crew devised a means to cut down on their multi-day long distance back and forth

***We learn lessons hard and slow  
and always seem to come full circle...***

## Lessons Learned – Overcoming a Challenge

### Learning Lessons

We learn lessons hard and slow and always seem to come full circle, noted a seasoned Hotshot Superintendent. He feels that no matter no matter what occurs, more rules, policies, and guidelines are not necessarily the answer. Instead, this Superintendent offered that a continual return to the application of basics – Lookouts, Communication, Escape Routes, and Safety Zones (LCES) are lessons we need to learn, relearn, and constantly apply. **Thinking firefighters make our best and safest firefighters because they are involved, engaged, empowered, and encouraged to have their**

drives during fire season. **Contracted haulers using lowboy trailers are regularly employed by the crew to transport their crew rigs to the incident and back to their home unit.** Implementing this procedure has improved the morale of the crew and their efficiency since crewmembers can get home and rest, instead of constantly driving three to five days across the country. Wear and tear on the crew vehicles has been significantly reduced. Contact Cherokee National Forest Hotshot Superintendent Tim (TJ) Wharton at (423)743-5926 for details.

### Concentrating on the Task at Hand

A large fire in Colorado burned across the valley from the station where a newly organized Hotshot crew was undertaking seven weeks of initial training. The crew, based at 9300 feet, performed daily physical and class-

room training while a large smoke column rose into the sky behind them as a constant distraction. Adding to the challenging training environment was that everyone there knew that many other Hotshot crews were already working on the fire. In retrospect, this was possibly the most challenging time for the crew the entire year, knowing that they wanted to be dispatched but they could not accept a fire assignment until they finished all training requirements, approvals, and inspections.

**It became important for the Hotshot Superintendent to maintain focus thus keeping the crew focused on their training and development.** The Superintendent did this by continually speaking about and reinforcing the long-term importance of high quality training, while along with other supervisors, coaching and mentoring the training crew daily. The Superintendent also made the training as realistic as possible by developing field “practice” scenarios that involved long hikes to remote peaks where they conducted safety discussions, overnight “coyote” tactics, chainsaw and handline construction drills, and field shelter deployment exercises. These discussions and exercises were held incorporating the actual fire as a training backdrop.

The crew was also able to stay focused because of strong and effective leadership. Supervisors were upfront and honest with crewmembers from the first day about what it would take before they could be dispatched. Each individual knew they had a responsibility to help build strong crew cohesiveness. They knew this would be achieved through a demanding physical training



program with emphasis on conduct and safety. The goal was to become a solid Type 1 Hotshot crew who believed in their future.

A resulting recommendation based on this experience is that all newly formed Hotshot crews should go through a minimum five weeks training curriculum before being considered available for fire assignments. During this period it is suggested that these crews be referred to as “expansion” crews and not “training” crews.

## Training Curriculum Recommendations

### Interactive Training

Prepared lectures, scenarios on paper, and management speeches need to be augmented or replaced with realistic, high stress training environments. This type of training might be generated by multi-media (audio, video, 3D graphical animations) along with enhanced versions of sand table exercises. The U.S. Military regularly uses these technologies in their officer training. National laboratories also use them. Wildland fire “battle” case histories could be another way to use these technologies.

### Training During an Incident

Supervisors need to **select opportunities that stretch their crewmembers abilities, but not set them up for failure.** This type of training requires an investment of time, patience, and planning in order to facilitate effective assignments as opportunities arise. An effective learning environment creates a situation of moderate operational stress that a crewmember must overcome while trying to achieve the desired success. The supervisor must then step back and allow decision space for the crewmember to operate under and time necessary to make the needed decisions.

This can challenge a monitoring supervisor, as they need to stay neutral and uninvolved in the decision process unless there is an imminent breakdown of safety or operational protocols. The situation to the monitoring supervisor often is non-complicated and the solution obvious due to their own experience and expertise. To the crewmembers in training, this same situation appears, and should be, complex enough to offer a new set of challenges towards their skill set development.

Stepping back also allows the employee freedom to explore his or her own style of leadership. The supervisor encourages the crewmember by staying close and coaches only if needed, while being able to readily step in to handle significant or unforeseen changes in the fire environment. Supervisors who have a tendency to jump in “to help” may want to forego carrying a radio or turn it off during the monitoring of the training assignment. This will force them “to coach” rather than intercede and “do it themselves.”

## Basic Training Emphasis

Reemphasize in all operational training courses the **need to anchor and flank, keep one foot in the burn, and ensure adequate clean burn area as a must for safety zones.** Drill this in with *practice, practice, practice* as a key. Train to foster heightened situational awareness and discuss it constantly to reinforce it until it becomes an automatic mindset. This is the way people really learn. When you are not engaged in actual firefighting, discuss what has and is occurring, learn by observation, and share information. Identify self and crew ad hoc training opportunities by trying to match up what is taught and learned in a classroom, or an informal discussion environment, with what is then observed on the fireline as various situations arise.



## Unresolved Issues

### Overspecialization of Fire

Fire is fire. Have we allowed wildland fire to become too specialized? IMTs need to be able to manage the entire spectrum of wildland fire including suppression, wildland fire use, and prescribed fire. Wildland fire managers need the freedom to be able to appropriately apply the use of fire as a tool in resource management. At the field level, firefighters need to be able to understand and work in the various types of wildland fire environments.

### Fatigue Management vs. Time Management

Fire is a dynamic work environment and we need to be able to apply our knowledge and experience in meeting the objectives of the specific areas where we are working. **Inconsistency in application of rules**

**derived from fire fatalities** is a major unresolved issue expressed by a number of Superintendents. They identified the intended spirit of the rule, versus the absolute application of the rule, as often conflicting. They have raised concern that organizationally we are starting to be legislated on how to do our job. Their perception is that black and white rules are being imposed while they must deal with dynamic situations. This has caused firefighters to back off instead of attacking the fire even when a risk assessment indicates it is safe to proceed.

An example of this conflict is the 24-hour shift limit. This handcuffs initial attack and at times in 2002, resources were ordered off the line even though two more hours would have held a line until conditions cooled and relief arrived. This is not managing the incident or the risk. This is managing the hours of work because of concern over

adverse action. No risk assessment was performed to consider if additional work hours would, in themselves, present a safety issue due to fatigue. The only concern was strict adherence to the number of hours worked. This caused lines to be lost that had to be re-established by an incoming crew. Relief crews were exposed to the hazards associated with initial line construction versus those of holding an existing line.

### Rules of Engagement/Disengagement

There is nationwide inconsistency in the use of the strict engage/disengage rules regarding temperature, humidity, and winds. These rules may appear to work on paper, but they do not consistently match up to what is happening in the field.

It appears that these rules are being misinterpreted and they need to be clearly defined. Their intent is to serve as thresholds or indicators to give managers a chance to re-evaluate their strategies. The wildland fire community needs to recognize that they are *indicators* of potential change in fire behavior that require attention and consideration. The rules are *not absolutes* regarding whether continued suppression or disengagement is warranted. ★

# VEHICLE OPERATIONS *and* ACCIDENT RESPONSE

*The Lessons Learned Center recently obtained the input and expertise of certified accident reconstructionist Mark T. Bailey. Mr. Bailey is certified by the Accreditation Commission for Traffic Accident Reconstruction (ACTAR) and has among his credentials over 20 years experience with one of the largest U.S. Government fleet operators. This is the last of a series of articles the Lessons Learned Center has presented to foster the best practices relative to vehicle operations in the wildland fire community.*

**According to Mark Bailey, there are two critical means by which to identify and institute safety improvements** in wildland fire vehicle operations. The first is the institution of a proactive prevention approach that includes standardized vehicle type-specific operator training and second timely and quality post-accident data collection especially of short-lived evidence.

## Specialized Training

Bailey cited the vehicles normally associated with the wildland fire community such as engines, water tenders, utility body trucks, sport utility vehicles, pickup trucks, and extended body 15 passenger vans as the ones for which a type-specific minimum amount of specialized operator training is beneficial and should be provided.

Bailey further stated that these vehicles do not generally fall within the requirements for a Commercial Driver's License (CDL) endorsement. However, their high center of gravity or unique handling characteristics, especially under conditions of use in the wildland fire community, warrants that their operators be recipients of an ongoing program of initial and refresher training.

For a new operator of these vehicle types, he recommends a graduated supervised program of training to develop the needed level of proficiency. He believes initial training should conclude with a realistic road test that requires a practical demonstration of operator proficiency that is monitored and evaluated by trained vehicle type-specific driving instructors. The road test conditions should include narrow dirt and gravel mountainous roads and highway operation of fully loaded vehicles.

Practical training resources are available such as through the National Highway Transportation Safety Administration (NHTSA). As an example, they have published guidelines to reduce the risk of rollovers in 15 passenger vans. The Bureau of Land Management (BLM) has adopted these guidelines. The guidelines include assigning only those with experience in these types of vans as unsupervised operators. The guidelines also discuss the removal of the rear seat and properly screening the rear area of the van to provide a small storage space that separates cargo from passengers. Finally, the NHTSA recommends using the roof racks for lightweight items only. To view the entire NHTSA

15 passenger van safety guideline click on <http://www.nhtsa.dot.gov/Hot/15PassVans/index.htm>.

## Response Kit

In the event of an accident, Bailey stressed the benefit derived from a standard accident response kit that is developed and placed in each vehicle to include an at scene checklist. This would aid the systematic gathering of basic post-accident data. The sealed plastic bag type kit he described would include a disposable camera and be kept in each vehicle to record the accident scene before vehicles are moved and if practical, before the scene is otherwise disturbed. Bailey also suggested that a more advanced kit should be provided to responding supervisors. This response kit should have a SLR 35 mm camera, multiple rolls of various speed film, and the means to measure and more fully diagram the accident scene.

These kits and their cameras would provide two benefits, according to Bailey. Short-lived evidence such as tire markings on dirt, gravel or even paved roads can then be readily documented before they are erased by traffic or weather. The pictures can often be used later by an accident reconstructionist. The information facilitates subsequent technical analysis of what factors led to an accident and the development of focused and specific preventative training using actual occurrences as examples. Secondly, Bailey stated that high quality initial documentation of the accident scene and subsequent investigation follow up be combined with a reconstructionist expert testimony to aid agency success in tort claim adjudication.

Mr. Bailey mentioned how this two-prong approach was applied by one U.S. Government agency in a motor vehicle accident case he prepared. It resulted in a probable payout of a multimillion dollar tort claim actually being settled during the trial for a fraction of what the Government had at one point offered the plaintiff in pretrial settlement discussions. The U.S. Attorney's Office ability to impeach the plaintiff's expert witness-alleged causation of events that led to the collision was a key factor. The depth of this post accident investigation recovered short-lived evidence that is usually unavailable for reconstruction purposes. This evidence, when it was properly examined and evaluated, showed the collision did not occur in the sequence the plaintiff alleged, and that another defendant bore the primary responsibility for the accident. The agency was also able to show, based on recovery of this short-lived evidence, that the local police agency had placed the wrong private vehicle occupant as the vehicle operator in this fatal collision. ★

Mr. Bailey can be contacted through the Lessons Learned Center at <http://www.wildfirelessons.net/ContactInfo.htm>.