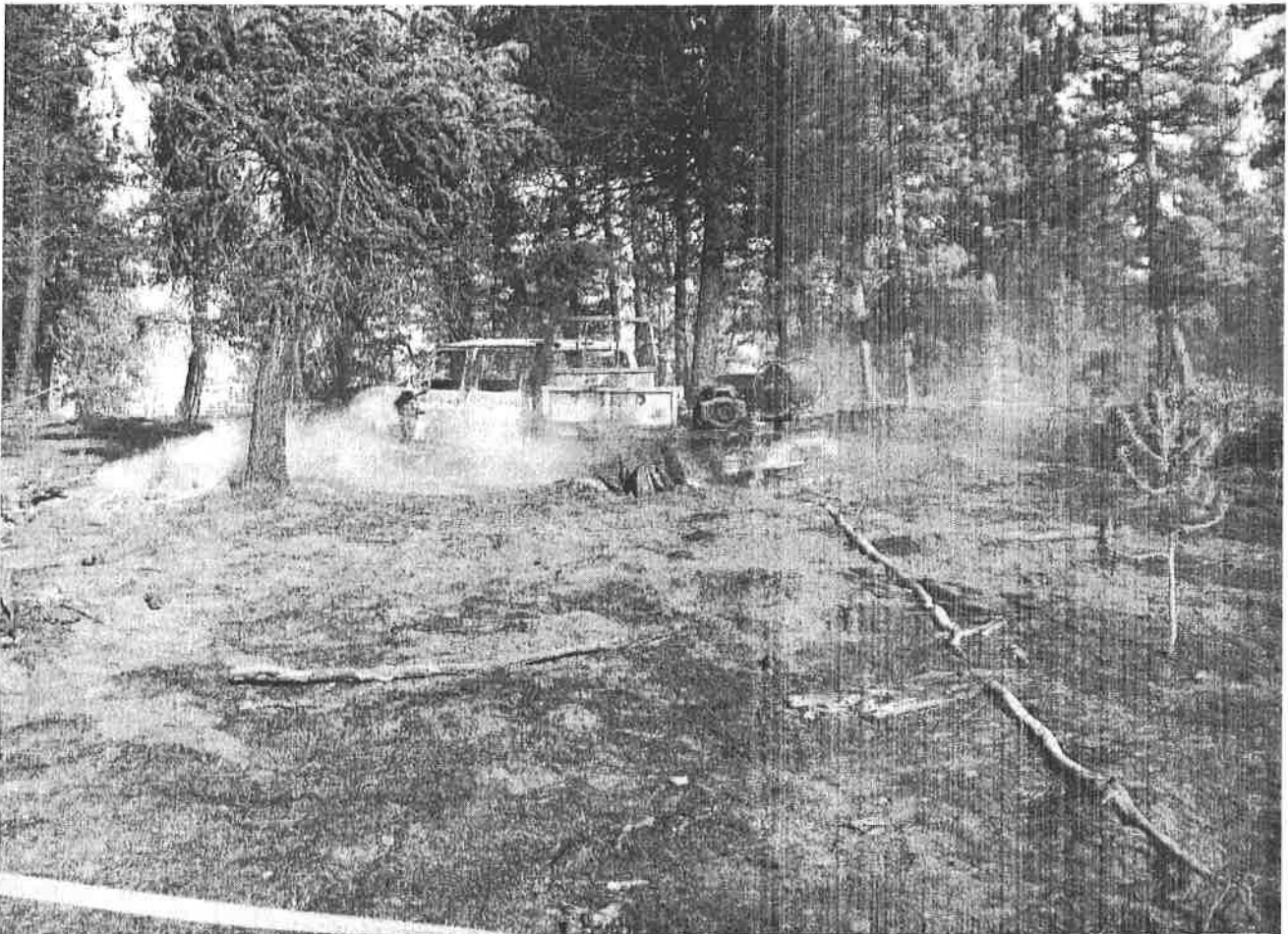


Potamus Fire Engine Burn-over Fact Finding Report

Incident Date: August 7, 2008

Report Date: October 27, 2008

USDA Forest Service
Umatilla National Forest
North Fork John Day Ranger District



Fact Finding Team:

- Patty Jones, Umatilla National Forest Safety Program Manager.
- Kristy Groves, Acting District Ranger, North Fork John Day Ranger District.
- Donald D. Crompton, Wallowa –Whitman N.F. Safety Program Manager
- Dan Shoun, retired fire and fuels manager from the Fremont-Winema NF and Klamath National Wildlife Refuge

Synopsis

The Potamus Fire (Incident OR-UMF-127) was located on the North Fork John Day Ranger District of the Umatilla National Forest (NF). The fire was an apparent result of ongoing widespread lightning activity, and was reported by government personnel at 1209 on August 7, 2008. The initial fire size estimate was 25 acres in light, flashy fuels. One Type 1 Interagency Hotshot Crew (IHC), three Type 6 engines, and two overhead were engaged at the fire mid-afternoon on August 7. The fire was active with occasional torching initially but became a backing, flanking fire by afternoon. The weather was unstable, with numerous convective cells reported that afternoon. At 1640, while fire fighters were engaged, the fire experienced a significant wind event associated with a passing thunder cell, causing a rapid acceleration in rate of spread and intensification of the fire activity. Fire fighters and one engine retreated; another engine was burned over, resulting in a total loss. No personnel were injured.

Brief History

Eastern Oregon has a high occurrence of thunderstorms; the Malheur, Umatilla, and Wallowa-Whitman National Forests have experienced serious past incidents associated with thunderstorms which involved injuries and fatalities of firefighters:

- Poe Cabin Fire, August 7, 2007, Three personnel received non-life threatening burns, Wallowa-Whitman NF, Hells Canyon NRA,
- Incident 128, Milepost 244 Fire, August 15, 2000, entrapment of three personnel and two dozers, Umatilla NF,
- Summit Fire, August 26, 1996, 53 personnel entrapment, Malheur NF,
- Magpie Fire, 1963, 21 personnel entrapment, Wallowa-Whitman NF, Hells Canyon,
- Cummings Creek Fire, 1960, 1 fatality (death by flames), Umatilla NF,
- Cyclone Fire, 1955, 1 fatality (death by flames), Malheur.NF,
- Hells Canyon Fire, 1949, 1 fatality (death by flames), Wallowa-Whitman NF

Many of the incidents listed above exhibit similarities:

- All incidents experienced a rapid change in fire behavior which developed from a change in winds associated with a cold front or thunderstorm (downbursts, high winds, change in wind direction, wind gusts).
- In many cases personnel were working above the fire.
- Many of these fires made rapid uphill runs into crew positions.
- Many of the incident locations were on upper slopes of large drainages, close to ridge tops.
- All personnel who died in these fires had separated from the main crew(s); many of the personnel attempted to outrun (uphill) a fast moving fire front.

Conditions/Environment

Weather Discussion

The fire weather forecast for the day of August 7th, 2008 was provided by the National Weather Service Forecast Office Pendleton, Oregon. The time of the forecast was 9:05 a.m.

The report read, "RED FLAG WARNING remains in effect until 11 p.m. PDT Friday for abundant lightning over dry fuels."

The discussion read: "Scattered thunderstorms producing frequent lightning have been observed across Central and Northeast Oregon. A low pressure trough off the coast will send a series of waves across the fire district for additional thunderstorms through Friday. Moderate to heavy rain can be expected underneath the core of the storms but little rainfall surrounding the storms." A severe thunderstorm warning was not issued for the thunder cell that passed over Incident 127 (the Potamus Fire), nor was the criteria met for issuing a severe thunderstorm warning. Other than the Red Flag Warning and weather statement provided above the National Weather Service - Pendleton did not provide any further updates, warnings, or watches.

THUNDERSTORMS IMPLY STRONG GUSTY WINDS

ORZ632-072315-
SOUTHERN BLUE AND STRAWBERRY MOUNTAINS-
905 AM PDT THU AUG 7 2008
...RED FLAG WARNING REMAINS IN EFFECT UNTIL 11 PM PDT FRIDAY FOR
ABUNDANT LIGHTNING OVER DRY FUELS
.TODAY...
SKY/WEATHER.....PARTLY CLOUDY. SCATTERED SHOWERS AND
THUNDERSTORMS.
MAX TEMPERATURE.....85-93...EXCEPT 79-85 RIDGES.
MIN HUMIDITY.....20-25 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...UPSLOPE LESS THAN 5 MPH.
RIDGES/UPR SLOPES...LIGHT LESS THAN 5 MPH BECOMING SOUTHWEST 2
TO 5 MPH IN THE AFTERNOON.
CWR.....10 PERCENT.
LAL.....4.
HAINES INDEX.....4 (LOW).
.TONIGHT...
SKY/WEATHER.....PARTLY CLOUDY. A CHANCE OF SHOWERS AND
THUNDERSTORMS IN THE EVENING...THEN A
SLIGHT CHANCE OF SHOWERS AND THUNDERSTORMS
AFTER MIDNIGHT.
MIN TEMPERATURE.....51-58...EXCEPT 56-61 RIDGES.
MAX HUMIDITY.....61-71 PERCENT.
HUMIDITY RECOVERY.....GOOD...EXCEPT MODERATE RIDGES.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHWEST WINDS 2 TO 6 MPH IN THE EVENING
BECOMING DRAINAGE WINDS LESS THAN 5 MPH.
RIDGES/UPR SLOPES...NORTH WINDS 3 TO 7 MPH.
CWR.....10 PERCENT.
LAL.....4.HAINES INDEX.....3 (VERY LOW).

National Wildfire Coordinating Group (NWCG) Glossary of Wildland Fire Weather Terminology

A Fire Weather Watch is issued to advise of conditions which could result in extensive wildland fire occurrence or extreme fire behavior.

Red Flag Warning is a term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern.

A Flare-Up is a sudden acceleration in rate of spread or intensification of the fire. Unlike a blowup, a flare-up is of relatively short duration and does not radically change existing control plans.

Terrain and Position of Fire on the Terrain.

The fire was located at the top of the east sidewall, of a deep, north-south oriented canyon, with grass vegetation on the slopes and stringers of timber in the draws near the ridge tops. Land ownership was Umatilla National Forest (Figure 1, topographic map of fire area).

Personnel and equipment on incident at the time of the event

One Incident Commander Type 3 (IC3),
One Unit Liaison (filled miscellaneous overhead positions),
One Strike Team Leader Engines (STEN)
Three Type 6 engines
Type 1 Interagency Hotshot Crew (IHC)

Chronology of Events

The following chronological sequence of events was extracted from interviews, statements, and two separate radio logs. It captures in part the radio traffic early in the Potamus Fire. The chronology covers the time period from when smoke was reported to shortly after the engine turnover, which is less than a full operational period.

All incoming resources received (as per Overhead interviews) a full briefing from personnel at North Fork John Day Ranger District and at the fire location. The IHC Superintendent said he felt that the briefing from the Unit District Fire Management Officer (DFMO) and Assistant District Fire Management Officer (ADFMO) were complete. The STEN stated all engine personnel received a full briefing, including current and expected weather, radio frequencies, fire danger pocket card, etc.

** (asterix) indicates that the entry was from Ukiah Base Station radio logs; all other radio entries are from Pendleton Dispatch (PICC) radio logs.*

1209: Incident 127 was identified on the North Fork John Day Ranger District by Madison Lookout. The smoke was also reported by Indian Rock Lookout.

1213-1215: Recon flight called in incident to Pendleton Dispatch.

1219: Pendleton dispatcher talked with dispatcher at Ukiah Base Station and notified the North Fork John Day District Fire Management Officer (DFMO), and Assistant Fire Management Officer (AFMO).

***1249:** An Interagency Hot Shot crew (IHC) was assigned to the incident and left Ukiah for the fire. DFMO led the IHC to the fire site.

***1345:** DFMO radioed to Ukiah Base Station that he was within 200 yards of the fire. It was torching with black smoke. DFMO stated that he may want aerial support. Note: At this point DFMO was incident commander (IC) on the fire.

1403: Pendleton Dispatch radioed DFMO. Advised DFMO that the fire was “really starting to take off”. The IHC Superintendent had looked at the fire and prepared a plan to engage the fire. Fire size was estimated at 25 timbered acres. Winds were light/gusty with upslope gusts of 5-8 mph. The fire was exhibiting higher flame lengths. The IHC superintendent was given a briefing on-site; DFMO said LCES was in place.

1415: Pendleton Dispatch radioed DFMO and advised him that excessive lightning was headed in his direction at in about 10 minutes. DFMO asked for more information.

***1440:** Three Type 6 contract engines, E-1, E-4, and E-5, and one Strike Team Leader (STEN), left Ukiah for the incident.

***1447:** DFMO radioed Ukiah Base Station with a fire update: Little wind. The fire had expanded about 5 acres and had calmed down. Line had been constructed across the top and south flank of the fire, with approximately 30% containment; looking good. This crew with engines “would be OK”. DFMO ordered a 3000 gallon water tender for “tomorrow or today”. Planned to work overnight; double shift. Let Acting Ranger know that crew will exceed 16 hours. Agency Administrator copied.

***1519:** Unit Liaison radioed to Ukiah Base Station that he had arrived on scene and was with DFMO/IC. DFMO/IC related that Unit Liaison was on scene and that he would return to Ukiah. IC position transitioned from DFMO to IHC Superintendent. The fire was reported to be 60% lined; would have fire lined in an hour.

***1530:** DFMO radioed that he was heading back to Ukiah. About this time STEN and the three engines and personnel arrived at the fire.

1530-1626: STEN tied in with Unit Liaison., then with the IC. IC briefed STEN and engine personnel on the fire. He told them to work the top half of the rim, then down the north side of the fire. He requested the engines to do a hose-lay down the north side. To the engine personnel, STEN expanded on the IC’s briefing and explained planned work, including the need for a hose-lay on the north side and a wet line. STEN says that Ten and Eighteen, and LCES were in place.

The engines engaged the fire by wetting down a few spots, and then tied in with cold black. They started a wet line across the northeast corner (top) of the fire. After getting E-1 and E-4 situated, STEN walked personnel from E-5 across the flat adjacent to Road 5316-350 out to some rotten logs. STEN asked them if they were comfortable putting a hose lay into the area. E-5 agreed and then backed his engine into the area and they started to work.

STEN went down the north flank, estimated hose needs, and tied in with IC at the vehicles in the 5316-350 clearing. IC asked STEN to place the hose order with Ukiah Base Station.

***1623:** Unit Liaison radioed to Ukiah Base Station that a second smoke had popped up near the current fire.

***1626-1627:** Attempted communication from STEN to Ukiah Base Station was unreadable. STEN then used the vehicle radio to contact Ukiah Base Station because Ukiah wasn’t reading the STEN handheld radio well. STEN ordered 1000’ of 1 ½” hose, 1000’ of 1” hose, and fittings, gated Ys, and nozzles for eight laterals. STEN returned to the engines.

***1630:** Ukiah Base Station radioed IC that weather was coming through. Affirmed by IC.

NOTE: Based on the interview with the IC, he does not recall being directly informed about the impending thunder cell coming through. He does recall hearing information on the radio about 20mph winds. STEN, E-1, and E-4 stated they did not hear the radio traffic on weather coming in. Unit Liaison and E-5 stated they heard the warning.

Engine E-1 was assisting IHC members cool down a large standing pine tree with a burning bole, located diagonally down slope from E-1. E-1 personnel then needed to take the engine out to Road 5316 to refill. E-1 personnel requested the E-4 engine to replace them and assist the sawyers cool down the burning pine tree bole. Engine E-1 left to refill and engine E-4 relocated to E-1's site near the large pine tree. E-4 began using E-1's hose-lay on the pine tree. E-4 (STEN thinks) reported to STEN that the northeast corner was heating up (Figure 2, aerial photo of fire area).

1630-1640: STEN returned to the area of the engine E-5 hose-lay on the slope below E-5, the fire's north flank. E-5 crew member was at the end of 200' of hose downhill from E-5. STEN told E-5 personnel to pull the hose lay since this area was heating up. Personnel from E-5 began pulling hose.

E-4 was asked by the sawyer to move their engine away from the large pine tree. E-4 moved the engine a short distance uphill. The sawyer at the pine tree had made his back cut and was beginning to cut the tree.

Immediately before the significant wind event associated with a passing thunder cell, the IHC, with the exception of the sawyers at the pine tree, was working half on the north flank and half on the south flank of the fire. They were preparing to construct uphill line.

STEN noticed that the sky was very dark. STEN considered radioing for aerial support but thought it was too late because it was so dark. STEN watch said about 1640. This was the point at which the significant wind event associated with a passing thunder cell occurred resulting in an immediate change in wind direction and speed. Personnel estimated the gust anywhere from 20 to 50 mph. Immediately following this smoke and ash began blowing by them and visibility was reduced to zero. STEN radioed to the engine personnel to pull out, leave the hoses, and get out to Road 5316. IC ordered all personnel to the safety zone. The beginning of the wind event and initiation of retreat uphill happened within a few seconds.

The fire jumped the line on the north and northeast flanks. Visibility for STEN, a hot shot standing near the STEN, and the engine personnel was at zero. STEN repeatedly radioed to E-4 and E-5 as she was running to her vehicle.

Engine E-4 was in heavy smoke but drove off the fire line and to the safety zone on the 5316. E-4 radioed to STEN that they were OK. Unit Liaison radioed to STEN that E-4 had just driven past him, and that E-1 was out at Road 5316 filling up. STEN told Unit Liaison to get the engines together at Road 5316. STEN continued to get no answer from E-5. STEN moved her vehicle somewhat up Road 5316-350, out of the heaviest smoke.

Personnel of Engine E-5, headed upslope when the significant wind event associated with a passing thunder cell occurred. The fire front was already at the engine tires when they got there. The Engine Foreman saw his crew member open the engine door; the Engine Foreman told him not to try to move the engine, but to run uphill. STEN was radioing for E-5. E-5 Foreman said he did not answer STEN radio call because he could not breathe. E-5 crewmember had left his radio in the engine. STEN picked up E-5 crew on the

5316-350 road and headed out to the safety zone. STEN radioed IC that everyone was out; IC said he had all of his people also.

Many of the personnel, including STEN and E-5, saw a red glow in the very dense smoke during the flare-up. Most personnel heard what they described as the sound of a very loud train during the event. Personnel saw trees in the area bend almost at right angles. At least one person reported that the pine tree, which was partially sawed but not yet on the ground, was swaying wildly, yet it stood through the wind event.

* **1645:** STEN radioed to Ukiah Base Station that the fire had jumped the line, and that one engine was burnt, entirely. All personnel on the fire were reported to be accounted for and safe – no injuries.

***1650:** IC radioed to Ukiah Base Station that all personnel were safe, that they were experiencing rain (heavy rain), and that one engine was burned over.

***1717:** Ukiah Base Station requested status from STEN. STEN reported about 40 spot fires were scattered over about ¼ mile. Fire 127 was reported to be a lot more than 25 acres in size. Personnel at the fire were requested to keep the burned engine secured.

***1721:** STEN requested a Type 2 crew for the spot fires.

***1748:** Ukiah Base Station requested Unit Liaison to return to Ukiah. District Type 3 Incident Commander headed out to the fire.

1800: District Incident Commander radioed to Pendleton Interagency Coordination Center (PICC) that he would be at the fire in 45 minutes.

***1818:** Unit Liaison radioed Ukiah Base Station that he and two engine personnel from E-5 and were en route to Ukiah, ETA 35 minutes.

***1831:** STEN radioed Ukiah Base Station that fire personnel were re-engaged, working on spot fires, and working toward the main fire line.

1900: Contract Representative Northwest (CRNW) arrived on scene at Incident 127. He tied in with District Type 3 Incident Commander, and took statements from STEN, IC, and E-4 Foreman.

Around 2030: IC position on incident 127 transitioned to District Type 3 IC.

FINDINGS

The passing thunderstorm and associated wind played a significant role in the engine burnover. As described above, fire behavior accelerated very rapidly.

Fire personnel interviewed stated that they were fully informed on the current and predicted weather. Though aware of the Red Flag Warning indicating the potential for strong gusty winds and extreme fire behavior, key fire personnel did not base fire strategy and tactics on forecasted weather or potential fire behavior. Incident personnel based actions on fire behavior prior to the flare-up. Personnel on the incident were surprised by how rapidly the fire activity change occurred.

Operational Environment

The personnel on the incident were actively mitigating all risks based on their experience and current fire behavior. Even though supervisory and other personnel on the incident had formal training on topography, fuels, weather, and associated fire behavior, personnel on the incident were surprised by the rapid change in fire behavior that resulted from the sudden change in wind direction and speed. Their lack of experience in such an event significantly influenced their perception of the seriousness of the advancing cell.

In hindsight, potential fire behavior was seriously underestimated. Tactics were based on the current (moderately low) fire behavior and were not based on both current and predicted fire behavior and associated hazards, thus influencing tactics and strategies. This underestimation of potential fire behavior resulted in the placement of engines and crews in unsafe positions.

A key point learned from this incident is that highly trained firefighters with many years of service still may not have experience with all high risk/low frequency hazards that may occur when suppressing wildfire.

After the incident, some of the personnel on the fire felt, based on the experience gained, in the future they would be better able to identify the seriousness of an advancing thunder cell and more effectively apply appropriate tactics, strategy, and LCES, and so prevent a similar burnover incident.

Note: *NWCG Incident Response Pocket Guide does not provide tactical watchouts, guidelines, and or checklist for minimum safe engine operations. Engines on this incident were placed off of roads with unburned fuels between them and the fire.*

Briefings/Communications

All personnel felt that they received a thorough briefing. No standardized format was utilized in conducting the briefings, such as following the Briefing Checklist in the Incident Response Pocket Guide. All incoming resources were briefed upon arriving on the hosting unit and incident. Fire weather was a key component of these briefings. This was particularly important on this incident due to the terrain and potential for sudden intensification of the fire behavior resulting from the passing front and cells moving through the area.

Documents such as the Northwest Incident Organizer, National Wildfire Coordinating Group Incident Response Pocket Guide, and Fire Danger Pocket Cards were available to supervisory personnel on the incident or provided to them prior to being dispatched to the incident. Specific safety analyses, such as those found in the Northwest Incident Organizer, were not conducted. Guidance and critical information from Look Up, Down, and Around, the LCES Checklist (IRPG), and/or the Fire Danger Pocket Card was not utilized in briefings.

Radio Communications

- Personnel were using Channel 3 for project; and using Channel 8 for command. Some personnel were using Channel 3 and scanning Channel 8; some were switching back and forth between Channels 3 and 8.
- Not all supervisory personnel were scanning the command frequency on the incident and may not have heard all communications for the incident.

- Not all pertinent information was being passed down to all resources on the incident when it was known and/or conditions changed on the line.

LCES

For this initial attack operation, LCES had been established based on current fire behavior. IC (IHC superintendent) served as lookout for his crew. STEN was lookout for the engines.

Based on the size of the incident it was felt by incident personnel that the supervisors on the incident were sufficient to adequately monitor the fire.

The fire location was timbered, and there was a second fire across the canyon below the logical location for a lookout. The next best location for a full strategic view of the entire fire perimeter and advancing weather was on Road 5316. The assigned lookouts on the incident did not have a full view of the sky due to their position at the fire on the upper canyon slope and under canopy cover

Escape Routes/Safety Zones

A safety zone was established on Road 5316. If retreat was required, engines were to move out to the Safety Zone on Road 5316. IHC members were to go into the black or back out on the route they came in on. Escape routes and safety zones were based on current fire location and behavior, not on potential fire behavior. Once the flare-up occurred, the escape route for the engines was compromised.

RECOMMENDATIONS

Need for Further Review of Incident

The team did not find a level of adverse organizational influence, unsafe supervision, preconditions for unsafe acts (latent failures), and unsafe acts (active failures) which would warrant the need for further review of the incident.

Changes in Unit/Forest Operations to Prevent a Similar Event

Briefings and Reassessments: The safety analysis process found in the Northwest Incident Organizer and the risk management process in the IPRG should be completed prior to conducting briefings, so that information may be provided in the briefing. Checklist, watch out, and strategy guidelines from interagency pocket guides and cards should be referenced in briefing. Using the Briefing Checklist in the IPRG will aid in ensuring that critical information is not overlooked. Additionally, guidelines and checklists needs be referred to during reassessments as fire and other conditions change. The utilization of checklists and guidelines, providing thorough briefings, and regular reassessments of the situation will significantly aid in conducting professional, safe, and efficient operations.

Communications: Flow of communication needs to extend to each fire fighter. Effort must be made to assure that each fire fighter understands the intent of each communication. Each supervisor needs to scan the Command radio channel on the incident, as well as communicate on the tactical channel.

LCES: The IC should consider all the values (including on-coming adverse weather) of an assigned Lookout when determining where that Lookout should be. Additionally, the fire's potential to encroach and impinge on an escape route should be considered when developing triggers. Safety routes should be designed to provide an effective way out when conditions deteriorate. Trigger points should be designed to allow sufficient time for both personnel and equipment to traverse the escape route in an orderly fashion when changes in fire behavior cause the fire to advance in the direction of the escape route. Often no individual cue from the fire seems alarming, but cues collectively identify the potential for escalating fire behavior. More conservative trigger points ensure greater effectiveness of escape routes. Escape routes and trigger points must be based on current and expected fire behavior, and continually re-evaluated as fire and weather conditions (and predictions) change, and any changes in escape routes and triggers must be communicated to all employees involved.

Weather: John Bonk of the National Weather Service in Pendleton, Oregon, recommends the following for a Lookout location when changing/approaching weather needs to be critically observed:

- Distance from incident approximately two to three miles,
- Higher than the incident location, with a 360° field of view.

Lookout Towers:

Lookout tower(s) would have been an asset to this incident and to managers on the unit/Forest. The one fire lookout tower closest to the incident was staffed (Madison Butte on the Heppner RD). However, several other lookout towers in the geographical area were not staffed on August 7, due to safety concerns for tower personnel. The copper ground wire on the towers had been stolen, and it was not safe for personnel to work in the towers during lightning storms. The fact that these towers were not in operation on the day of the incident is not considered a causal factor to the incident. Incident personnel are trained to safely manage incidents in the absence of assistance from lookout towers.

However, for units which work closely with their network of towers, there is a benefit from the assistance they receive from experienced lookout staff. The tower(s) may have been of value in light of the inability of the incident personnel to have an established lookout which had full strategic view of the entire fire perimeter and advancing adverse weather conditions. All incident personnel who discussed this topic felt strongly about the positive benefits that experienced lookout staff provide to suppression personnel on the ground.

Video/Sand Table Exercise:

A video and accompanying sand table exercise should be developed which emphasizes the potential (high risk/low frequency event) of rapid/extreme fire behavior from an overhead extreme thunder cell. The video should include narratives from this and other incidents which have occurred because of passing cells/fronts. Include dramatic photographs and narratives of employees involved. Find people with the experience and knowledge i.e. pilots, air attack, NOAA, experienced Fire Behavior Analysts, and fire line operation personnel.

Some specific areas to focus on:

- a. Using fire personnel that have experienced these down drafts for training purposes. Use examples and near misses as discussion points related to weather.

- b. Incorporation of current/predicted daily weather forecast to local conditions – topography, aspect, elevation, percent slope, and fuels.
- c. Fire behavior predictions/warnings are a key element when developing strategy/tactics. Get folks to take notice of all fire behavior information, especially predicted fire weather (red flag warnings) and especially those that may be significantly influenced by local topographic conditions.

Experienced Based Training:

A complete understanding of the risks involved in any undertaking is a combination of experience and training (Training + Experience = Understanding). Regionally and nationally we should look further into how we may more effectively provide experienced based training and or performance based training . Management needs to ensure that all supervisors have the appropriate level of training/experience to deal with all High Risk/Low Frequency hazardous situations. Becoming aware of the hazard of entrapment is a key step in reducing the risk. Having the experience base combined with the training will equate to understand thoroughly; grasp clearly and fully the nature, character, functioning of how to avoid potential hazards. Fully understanding will better prepare you to pick up on all clues, thus providing for better situational awareness (avoidance of potential hazards).

Individuals who have had training and experience in high risk/low frequency hazardous situations as severe to extreme weather events on an incidents are better prepared to pick up on all indicators and have the emotional trigger to following through in a timely manner on effectively mitigating the hazard.

Incident Review (Assessments)

(Risk Management, Incident Assistance, Doctrinal/Professional Fire Operation Standardization)

Implement a series (up to 100) of site visits/assistance reviews to initial attack (IA) activities. From these visits, identify any patterns that need improvement, and from this information develop recommendation to improve safety and efficient wildland fire operations. We need to take a hard look at how we are truly currently conducting IA operations. This effort should focus on honesty (how we are really performing) and whether IA activities are in alignment with Doctrine, agency and interagency operational policies, procedures, and guidelines for managing/conducting wildland fire operations. Areas of deviation need to be clearly identified with recommendations for improvement.

A good review helps to identify professional, safe, and efficient tasks/operations and transform them into an empowering learning process for all involved, further strengthening professionalism within the wildland community.

Specific Considerations:

1. Look into keeping one crew member per engine at the engine at all times during fire line operations.
2. Look into the advantages of a minimum of three person staffing on contract and agency engines.
3. At times the difference between the hearing and the understanding of a message is in the messenger and their ability to articulate that message. During periods of potential or actual critical fire behavior

(Red Flag warnings, fire season severity indices above the 90th percentile, strong winds, dry lightning), briefings to fire personnel should emphasize the potential fire behavior that may result from forecast weather.

4. In the NWCG Incident Response Pocket Guide under the Thunderstorm Section, provide some minimum operational guidelines for advancing weather systems. Suggestions:
 - Ensure to base (and adjust) all operations, strategies, and tactics on advancing weather systems and associated potential fire behavior.
 - On-the-ground lookout locations should be adequately adjusted to effectively monitor the advancing weather system. Escape routes and safety zones should be re-evaluated for access in the case of rapid fire spread and for lightning protection.
 - Alternate escape routes and safety zones that account for wind shifts and rapid fire spread should be in place.
5. Look into providing engine operational safety information in the NWCG Incident Response Pocket Guide and other reference guides for wildland fire suppression. Information should provide tactical watchouts, guidelines, and a checklist for minimum safe engine operations.

Summary:

Each employee was cooperative and instrumental in providing factual information leading up to the mishap. The intent of this report is to describe probable contributing factors in the mishap, not to assign personal blame or insinuate fault. The objective is not to second guess actions or decisions, but rather to reflect on them to advance discussion on how to best plan for both current and predicted fire potential in high risk low frequency hazardous events.

The primary causal factor for this incident was that the personnel engaged on this fire based their actions on current fire behavior and not predicted fire behavior. Had placement of engines, location of lookouts, and location of escape routes been based on the potential fire behavior that could result from a very strong wind associated with an overhead thunder cell, this incident within an incident may not have occurred.

Nationally we are clearly seeing common denominators between similar types of fire incidents. It is critical that we, as an organization, learn how subtle shifts in operational practices can lead to potentially catastrophic outcomes. The fact finding team believes the operational strategies and tactics implemented on this incident have likely occurred on numerous incidents across the country. During the fact-finding, it became very clear that each individual did the very best they could given their specific situation and circumstances based on their level of training and experience. In fact, had the significant wind event associated with a passing thunder cell not occurred on this incident, all of the faint signals of accepted operational shift would likely have been overlooked. If the wind event had not occurred, the incident would have been viewed as a successful operation and again common negative behaviors (complacency, lack of situational awareness, not fully living up to doctrine principals and professional conduct) would have been reinforced.

Appendix I. Documents Reviewed

Weather forecasts for 8/7/2008
Ukiah Base dispatch log (copy)
PICC Dispatch log (copy)
CRNW interview notes with Strike Team Leader, Type III IC, E-4 Engine Boss, E-5 Engine Boss, Misc. Overhead
Strike Team Leader statement to LEO
Statement from initial interviewer
Contract Engine Inspection Form (E-5)
Incident Form (INC 127 – from PICC)
Incident Form (INC 127 – from Ukiah Base)
Note from Pendleton Dispatcher regarding burned over engine 8/7/2008
Unit Log, Misc. Overhead on Inc 127 8/7/2008
Emergency Equipment Shift Ticket – (E-5) 8/7/2008

Appendix II. People informally interviewed

E5 Engine Boss, Crown Chasers – contract,
E4 Engine Boss, Crown Chasers – contract,
E4 Assistant, Crown Chasers – contract,
E1 Engine Boss, Bruce Young Logging – contract,
Engine strike team leader, Inc 127 –FS,
Type 3 IC, and Type 1 Interagency Crew,
Single resource, Inc 127 – FS,
North Fork John Day FMO.

Figure 1

Topographic Map of Fire Area



Figure II
Aerial Photo of Fire Area

