

POT PEAK FIRE
ASSESSMENT TEAM REPORT
JULY 10, 2004

Prepared by:

Nancy Lee Wilson, Fire Planner, Umatilla NF
Dale Gardner, Retired, Willamette NF
Richy Harrod, Fire Ecologist, Okanogan-Wenatchee NF



Introduction

The Pot Peak Fire was first reported the morning of June 26, the result of lightning activity on June 25. Initial attack by rappellers, supported by helicopter water drops, was unsuccessful in controlling the fire. A District Type 3 organization managed the fire through the afternoon of June 26, and the Forest Type 3 IMT was in place on June 27. A Type 2 IMT assumed command on June 28. Command was transferred to a Type 1 IMT on July 2.

On July 5, a Fire Assessment Team was ordered by Forest Supervisor Jim Boynton. The team was briefed at 1530 on July 6, and was delegated the authority to “complete a long-term analysis, assessment, and recommended actions for the Pot Peak Incident, in terms of treatment of fuel between the burned area and the (WFSA) Alternative A boundary.”

There are a number of reasons that the Pot Peak Fire is of significant concern and worthy of a “long-term” assessment. This fire has the potential for season-long commitment of resources, with lengthy exposure of people to fireline hazards, and accessibility issues. There is a legitimate threat to structures, improvements, and private lands east of the fire. The fire is located in the “bowl” of Twentyfive Mile Creek, and has the potential to be contained by the Tye Burn (1994) on the south, the North 25 Burn (1998) on the north, and the major divide (Devils Backbone) on the west. Burnout of control lines at higher elevations is currently limited by “greenness.” There may be a need to “remobilize” resources later in the fire season as conditions change and fuels become more prone to burnout. Long-term impacts of smoke over, and at the surface of, Lake Chelan are a potential public relations and economic issue.

As with all long-term fires, there are economic and political concerns regarding real and perceived fire suppression costs.

Analysis Method

The Assessment Team used a strategic risk assessment approach. We gathered information, analyzed potential fire behavior and spread potential, assessed the probability of certain events occurring, considered values at risk, considered trigger points and potential problem areas, identified and evaluated options, and recommended a possible course of action.

The Forest has done an impressive job in assembling and updating fuels data layers, weather history, and fuel moisture, fire danger, and seasonal trends. In addition, they have capitalized on the “lessons learned” from their history of large fires. We utilized appropriate portions of this information, along with the Fire Management Plan, and most importantly were able to talk with a number of experienced fire personnel to gain their local knowledge, perceptions, and thoughts.

The team developed two strategies that were appropriate for this situation.

Management Direction

The Federal Wildland Fire Management Policy provides direction for suppression of wildland fire under the least cost scenario with firefighter and public safety as the highest priority.

Fire Management Areas (FMA) 45 and 48 of Fire Risk Zone 5 (Middle South) are considered unsuitable for a Wildland Fire Use strategy, so the appropriate management response is a suppression strategy.

Situation

Fire History and Current Fire Behavior

Large fires have been common in the vicinity of the Pot Peak Fire during the 20th century. The 1970s fires burned all of Slide Ridge, the upper portions of Twentyfive Mile Creek below Stormy Mountain, and the upper portions of North Twentyfive Mile Creek below Devils Backbone (Fig. 1). The Tye Fire of 1994 burned a large area south of Stormy Mountain, along the south aspect of Slide Ridge, and the upper portions of First Creek. The North 25 Mile Fire in 1998 burned a large area north of North Twentyfive Mile Creek up to Handy Springs and all the way down Box Canyon to Lake Chelan. All of these fires burned largely as stand replacing fires in lodgepole pine and subalpine fir forests. Today, the 1970 burned areas consist of dense regenerating lodgepole pine approximately 15 tall with heavy dead and down woody debris.

The Pot Peak Fire has been strongly influenced by the recent history of fire in the area. The fire started in a forested site that escaped the 1970s, North 25 Mile, and the Tye Fires. The fire burned actively in the old forest stands around Pot Peak, but has continued to burn with high intensity and severity in the young lodgepole pine stands. Heavy down woody fuels in the the young lodgepole pine are the primary drivers of fire spread and intensity. Flame lengths have been 2-6 feet for surface fire. Common daily upslope fire spread has averaged about 54 chains. Backing or flanking fire has averaged about 25 chains per day and fire almost completely consumes large woody debris and lodgepole pine regeneration. Torching occurs when fire energy release from large fuels and/or wind aligns with the slope. This results in 5-20 acre stand replacement patches.

The Deer Point Fire (2003) on the east shore of Lake Chelan north and east of this fire, has a number of parallels, and offers an excellent opportunity to compare potential fire behavior and progression, strategies and tactics, and management actions.

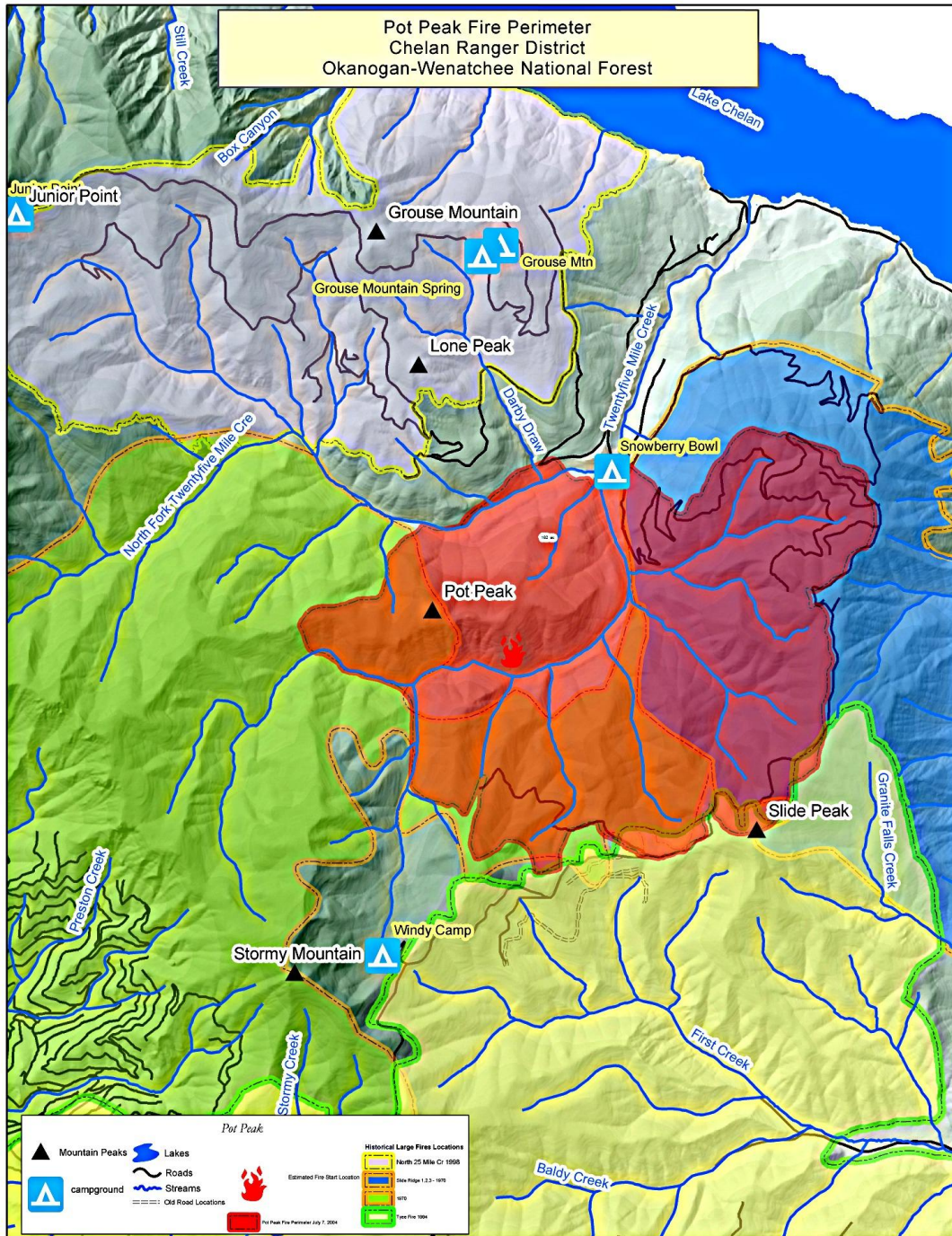


Figure 1. Fire history in the vicinity of the Pot Peak Fire.

Seasonal Severity Assessment

Most of the 2004 fire season has been above average fire severity potential. Indices, such as Energy Release Component (ERC), have been establishing new maximum values in the months of April and May. Average or slightly below average ERC occurred in late May and Early June, but values have again surged above historical maximum in the last two weeks (Fig. 2). The same trends are true for 1,000 hr fuel moistures. Most of the season has resulted in new historical minimum fuel moisture values (Fig. 3). The long range forecasts call for above average temperatures and below average precipitation (Fig. 4), which will lead to a persistence of high fire severity potential.

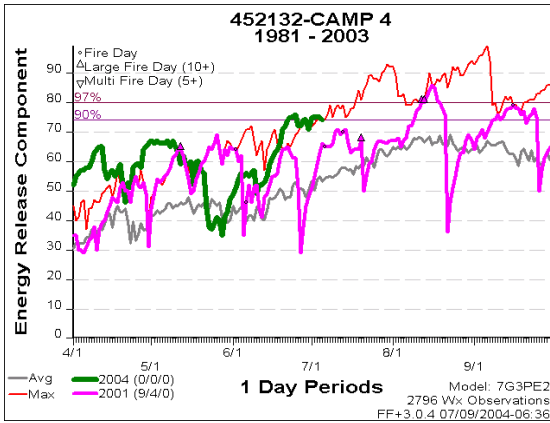


Figure 2. Energy release component from the Camp 4 RAWS.

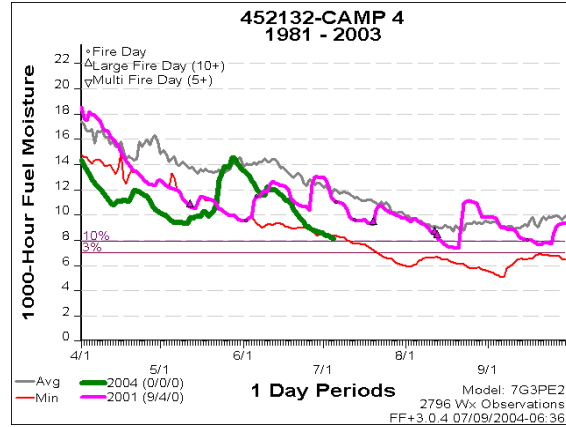


Figure 3. Large log (1,000 hr) fuel moistures from Camp 4.

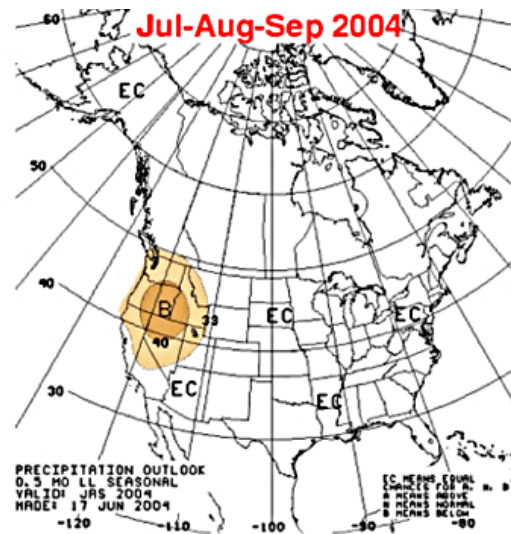
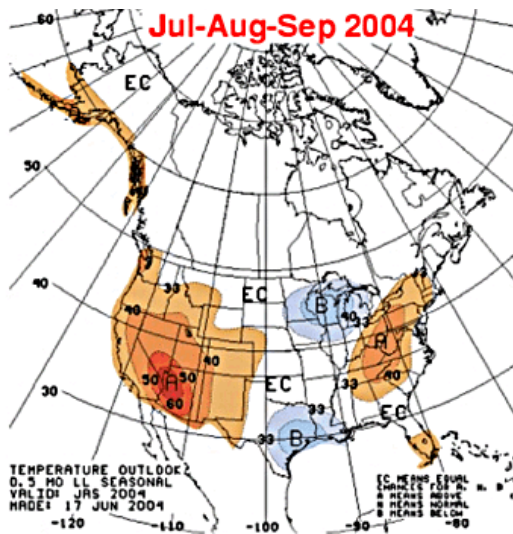


Figure 4. Long-term predictions of temperature and precipitation for July, August, and September 2004.

Fire Movement Assessment

We assessed the potential long range fire movement on the Pot Peak Fire by a combination of methods. First, we used persistence analysis on fire progression maps to determine common daily spread for both backing and head fires, as well as uncommon spread. In addition, we had numerous discussions with local fire managers and PNW Team #2 members who had observed fire movement firsthand. Next, we assessed the fuels within the entire Twentyfive Mile Drainage and used FMA Plus to determine potential fire behavior attributes in the different fuel types. The persistence analysis and FMA Plus outputs were similar, giving us some good estimates of fire growth. Finally, we used RERAP to determine probability of fire movement to two points on the southerly edge of the Twentyfive Mile Creek Basin (Stormy Mountain and Angel Peak). Potential fire growth rates in RERAP were also similar to the persistence analysis and FMA Plus results.

Historical weather used was from 1981 - 2003 based on the Camp 4 RAW (elevation 3,772) approximately 8 miles north of the fire. Wind direction is easterly 50% of the time in the months of August and September with an average speed of 8 to 10 mph. This is attributed to the general upvalley winds along Lake Chelan. An east wind direction was used for the analysis since an easterly upvalley wind in the Pot Peak basin is what would push the fire toward Devil's Backbone ridge. The center of low pressure systems during the summer season typically bump north along the Canadian border and produce strong westerly winds across the fire area about 38% of the time. The passage of cold fronts occurs about every 5 to 7 days. These winds effect on the fire is only on the upper 1/3rd of the ridge due to the bowl like topographic feature surrounding the fire area. With the east portion of the bowl already burned it is unlikely that a strong wind event will produce a rare event unless a spot fire across the fireline occurs.

Fire Spread to the East

There was high potential for the fire to spread east to the top of Slide Ridge and down the east face to Lake Chelan. Recent burnout operations on the north and east sides of the fire have resulted in a very low likelihood of the fire burning beyond the current perimeter from DP16 north. However, there is still slight possibility for spot fires to have gone undetected and reinitiate fire outside of the current perimeter. The areas between DP16 and DP24 have some weak spots where the fire could cross over the ridge. Patrols for spot fires over the next 7-10 days will be important to prevent further movement to the east.

Fire Spread to the South

Most fire growth has been on fingers of the interior fire moving up ridges. The area between Windy Camp and Stormy Mountain was identified as a location where the fire could cross into the First Creek Drainage or into the upper reaches of Stormy Creek on the Entiat RD. RERAP runs predicted a 99.9% percent chance that the fire will reach the ridge at Windy Camp (near Stormy Mountain) prior to the season ending event. Given the current rate of spread, the fire should be to Windy Camp within 7 days or less. Fire may spot into First Creek or Stormy Creek Drainages, but should be easily contained by helicopter bucket work. Fuels in those drainages are sparse and not likely to promote any

large fire runs, particularly since the fire would be backing downhill. Fire currently has reached the older stand of trees and fire spread has slowed.

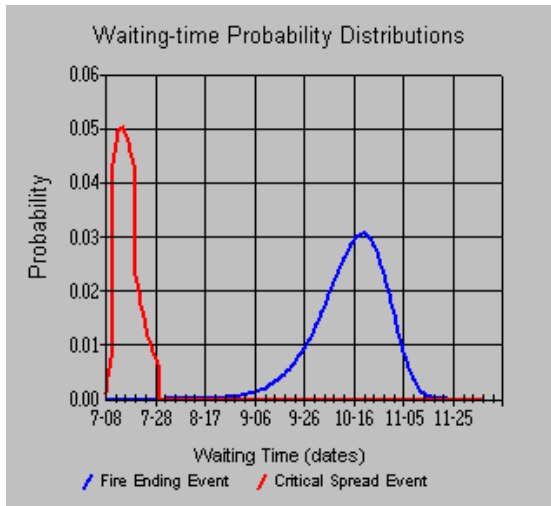


Figure 5. Critical fire spread probability and waiting time for season ending event for the Stormy Mountain transect. Critical fire spread occurs well before the season ending event.

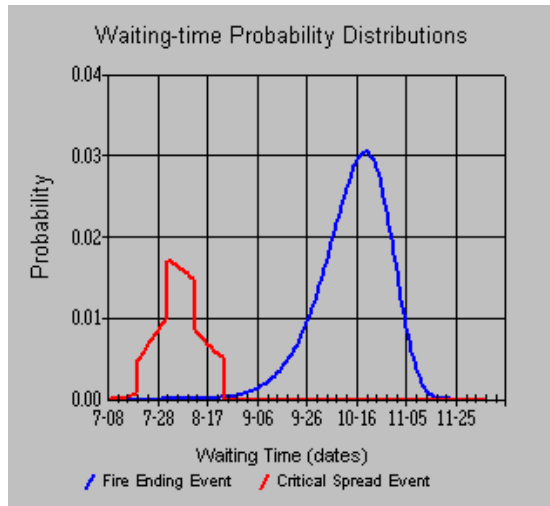


Figure. 6 Critical fire spread probability and waiting time for season ending event for the Angel Peak transect. Critical fire spread occurs well before the season ending event.

Fire Spread to the West

The area between along Devils Backbone, Angel Peak, and East Point were identified as areas of concern. RERAP runs predicted a 97.0% chance of the fire reaching Angel Peak before the season ending event (Figure 5). Currently, one finger of the fire is within a mile of that location and other fingers are likely to reach Devils Backbone within 7 days or less as well. Fuels are sparse on the north side of Devils Backbone and unlikely to promote passive or active crown fire, so spotting across the ridge to the south should be minimal. There is a small chance that the fire could spot across the ridge into Lake Creek Basin in the vicinity of East Point. However, the fuels on the upper slopes east of East Point are fairly sparse and not likely to promote passive or active crown fire. Any spots should be contained easily by helicopter bucket work.

Fire Spread to the North

The 1998 North 25 Mile Fire is directly north of the Pot Peak Fire and should serve as an effective barrier to major fire movement. Although most snags are still standing in the old fire area, there is fairly continuous grass cover, particularly in the Lone Peak area, that could result in rapid rates of spread to the west. The old fireline of the North 25 Mile Fire along the 5900 road should serve as a very effective barrier to fire movement. There was a high potential for the fire to spread to the north down Twentyfive Mile Creek. Recent burnout operations on the north side of the fire have resulted in a very low likelihood of the fire burning beyond the current perimeter in those locations. However, there is still slight possibility for spot fires to have gone undetected and reinitiate fire

outside of the current perimeter. Patrols spot fires over the next 7-10 days will be important to prevent further movement to the north.

Strategies Considered

Strategy #1:

This strategy focuses on a final fire perimeter bounded by Slide Ridge on the south, Devils Backbone on the west, the major divide from Crescent Hill to Grouse Mountain on the north, and the existing fireline on the east, for a total acreage of 23,100 acres. It assumes that there may be some downsizing of the existing suppression resources until such time as perimeter fuels are ready to burn out, which ideally will occur before the interior fire reaches the control line at one or more points. It will be key to permit the interior fuels to continue to burn out to minimize the higher fire intensities, burn severity, and spotting potential which would occur if this is delayed. Clearly it will be key to have adequate suppression resources in place when conditions favor burnout of perimeter lines.

Recommended management organization: A “custom-built” Type 3 organization, which includes a Type 1 Burn Boss or equivalent, is recommended. Depending on the resource mix on the incident, a specialized burn team may be useful in this situation.

Issues and concerns:

- Potentially long-term commitment of resources
- This option may involve some downsizing of the management structure initially, followed by remobilizing resources at some point in the future
- Sufficient lead time to react to the need to initiate burnout operations with the right things in place
- Interior fire may spread in a head fire run before the perimeter is sufficiently cured for a clean burnout

Estimated costs: \$4.5MM (assumes 30 days with a Type 3 IMT, with full base camp support)

Probability of success: >75%

Strategy #2 :

In terms of suppression action, this option would be the same as Strategy #1, with the exception that it would leave a more fully staffed management structure in place. The difference would be not having to “gear up” when conditions are right to continue burnout operations.

Recommended management organization: A Type 2 IMT is recommended.

Issues and concerns:

- This may be perceived as “overkill” initially
- Commitment of a Type 2 IMT may be questioned, particularly if in place for an extended period of time and other incidents are occurring
- In theory a Type 2 IMT generates higher priority for the incident than does a Type 3

Estimated Costs: \$4.9MM (assumes 15 days with a Type 2 IMT, 15 days with a Type 3 IMT, both will full base camp support)

Probability of success: >75%

Strategies Not Developed:

No Further Action:

This is unacceptable since it violates the direction in the Fire Management Plan, which calls for suppression action in this FMA.

Direct Attack:

There is little question that this is unacceptable from a firefighter exposure, risk, and safety standpoint. Escape routes and safety zones are essentially non-existent and perimeter access would be a significant problem.

Continue Burnout Now:

Would result in a spotty and incomplete perimeter burnout, especially at the higher elevations, with the resultant problems that come with a “ragged” perimeter burn.

Additional Management Considerations/Items To Consider

- Appropriate level of Forest, Regional, and National support for a long-term strategy; assurance of availability of resources when needed
- Periodic “truth-checking” of strategy and assessment of incident complexity
- Implications of long-term commitment of shared resources to the incident
- Periodic IR flights to track/evaluate fire progress and spotting, particularly in smoky conditions
- Understanding, acceptance, and support of strategy by communities, cooperators, political officials
- Air quality—message to communities regarding what is being done and rationale
- Long-term logistics/ support needs, impacts to District and Forest
- Potential for multiple transitions of IMT’s and suppression resources

- Ongoing assessment of effectiveness of old burns as barriers to fire spread
- Potential to activate another assessment team if conditions change markedly

Recommendations

The team recommends Strategy #1. While the final fire perimeter and size would be the same for both options and consistent with policy and direction, this one is more cost-effective. The Forest has substantial experience in staffing Type 3 Incidents, and potential for large fires here should be obvious. This assumes that resources will be available when requested when it is necessary to “remobilize” to carry on burnout, holding, and mopup operations.

The one modification to this recommendation would be if the main fire is anticipated to reach significant portions of the perimeter sooner than anticipated; in that case it would be worth considering a transition directly from the Type 1 to a Type 2 IMT.

Acknowledgements

The Okanogan-Wenatchee NF is to be commended for its use of Fire Assessment Teams as an aid in strategic decisionmaking. Just as they do for large incident operations, they provided excellent support to us in accomplishing our work. Richy Harrod was an excellent resource as a team member; his tenure on the Forest, technical training and background, and skills as a tactical firefighter are invaluable. Jim Burdick’s knowledge of fire planning and the Forest Fire Management Plan were exceptionally helpful. Jack Rainford provided excellent GIS support, including all the products needed to complete our work. The Chelan RD graciously provided work space and logistical support. Elton Thomas and Bob Sheehan provided wise counsel, advice, and support from the Forest. Mike Lohrey’s IMT provided any needed support, readily shared information, and made aircraft available for some valuable aerial reconnaissance. We apologize for any impacts to their operation.

Finally, tenured, skilled, and seasoned firefighters like Bruce Keleman, Gary Berndt, George Marcott, Donny Maks, Steve Decker, Marsh Haskins, and Randy Whitehall shared the most valuable resource of all---their thoughts, perceptions, and experience.

We appreciated the opportunity to assist with this task.