USE OF ALTERNATIVE SUPPRESSION STRATEGIES DURING 1994 ON THE CLEARWATER NATIONAL FOREST

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ABSTRACT

During the 1994 fire season, the Northern Region of the U.S. Forest Service (Region One) experienced one of its most active fire years on record. Some 2,885 wildfires were fought on national forest lands requiring over 10,000 firefighters at the peak of the activity. Expenditures on wildfires exceeded $122 million. This uncommon activity, coupled with heightened awareness of fireline safety, brought about by the South Canyon tragedy, led to broader application of the full range of fire suppression strategies. Alternative suppression strategies have been available since 1978 but they have never been applied across Region One to the extent that they were in 1994. Approximately 50 fires that escaped the initial suppression action required an Escaped Fire Situation Analysis (EFSA) and were managed under one of the alternative suppression strategies of either contain or confine. Most of these fires were managed by organized Incident Management teams while others, such as the Powell Complex on the Clearwater National Forest were managed by a "customized" Incident Management Team. Many other fires were managed using alternative suppression strategies under the initial action decision and were successfully managed under the initial strategy of contain or confine throughout the life of those fires. A Fire Situation Analysis (FSA) was prepared under these circumstances. On three national forests alone, it is estimated that over $30 million dollars in suppression costs were saved by using these strategies. The Powell Complex on the Clearwater National Forest was one of the incidents that was estimated to have saved over $14 million dollars using alternative suppression strategies.

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INTRODUCTION

Management of the Powell Fire Complex on the Clearwater National Forest in North Central Idaho provides a significant case history with respect to use of alternative fire suppression strategies. The Powell Complex was a series of wildfires managed by the same incident management team throughout the duration of the 1994 fire season. Various suppression strategies were used on these wildfires.

During the 1994 fire season 301 ignitions occurred within the Clearwater National Forest. The 10-year average number of wildfires on the Clearwater National Forest is 166. A total of 95 wildfires occurred on the Powell Ranger District, which normally has an annual average of 45 fires. The majority of fires managed by the Powell Complex occurred within the Selway-Bitterroot Wilderness.

A portion of the 1.3 million acre Selway-Bitterroot Wilderness lies within the Powell and Lochsa Ranger Districts on the Clearwater National Forest. This area normally experiences several prescribed natural fires (PNF) but from late July through mid-September, no PNF's were allowed due to high national preparedness levels and elevated Energy Release Components (ERC), putting the area out of prescription for PNF's.

The cumulative effects of drought over the past ten years, coupled with a low winter snowpack and light spring-early summer rains had set the stage for a potentially active fire season during 1994. Above average dry lightning storm activity with high temperatures and low relative humidities during the summer months also contributed to a very active season. Fire activity in Colorado, Arizona, New Mexico, California, Oregon, and Washington contributed to a tremendous drain on limited firefighting resources.

PRIORITY SETTING

The high level of firefighting activity required fire managers on the Clearwater National Forest to follow strict priority setting guidelines when assigning firefighting resources to new, emerging fires. Fires occurring within the large roadless or wilderness areas were less likely to obtain firefighting resources than fires threatening the wildland-urban interface or other higher value lands. Also, there was a heightened awareness of the risks firefighters were facing in 1994. The extreme fire conditions required fire managers to take a somewhat different view of how suppression activities should be conducted.

The Powell Complex was managed by an Incident Management Team whose responsibility was to deal with alternative suppression strategy fires within the Selway-Bitterroot Wilderness and adjacent roadless areas. Four distinct advantages were realized in using alternative suppression strategies on these fires: (1) firefighter exposure to safety hazards was decreased; (2) firefighting expenditures were reduced significantly; (3) resource damage resulting from suppression ef-

Table 1. Fires larger than 25 acres managed by the Powell Complex during 1994.

Date discovered	Fire name	Acres	Strategy
8/2/94	Freezeout	8,212	Contain-Escaped Fire Situation Analysis
8/12/94	Sponge Mountain	625	Contain-Escaped Fire Situation Analysis
8/13/94	Big Sand	1,699	Confine-Fire Situation Analysis
8/13/94	Fern Creek	3,078	Confine-Fire Situation Analysis
8/13/94	Gold Meadows	276	Confine-Fire Situation Analysis
8/14/94	Hidden Creek	1,551	Confine-Fire Situation Analysis
8/14/94	Bear 5000	64	Control-Initial Attack
8/14/94	Bear North	25	Control-Initial Attack
8/25/94	Heslip	25	Control-initial Attack
8/28/94	East Beaver	736	Contain-Fire Situation Analysis
9/23/94	Parachute Lake	194	Prescribed Natural Fire

forts occurred at a much lower frequency; and (4) the demand for firefighting resources was decreased allowing for more effective and efficient actions on higher priority fires.

POWELL COMPLEX EXAMPLE

Prior to August 1, 1994, the Powell Ranger District had conducted successful initial attacks on 29 fires. Only one fire required extended control actions. During the next 14 days, the district experienced another 35 fires. The decision was made to manage several of these fires under alternative suppression strategies of contain and confine. All of these decisions were made on fires that were located in the Selway-Bitterroot Wilderness. Those fires included Freezeout, Hidden, Big Sand, Sponge Mountain, Gold Meadows, Fern Creek and numerous other smaller fires.

On the Freezeout and Sponge Mountain fires, the decision to manage them under a contain strategy was made after they had escaped initial attack efforts. An Escaped Fire Situation Analysis (EFSA) was completed for these two fires. On all other fires, the decision to manage them under contain or confine strategies was made during the initial attack decision phase as addressed in the Clearwater National Forest Fire Management Action Plan.

The Freezeout fire was discovered on the afternoon of August 2nd. Initial attack by four helitack personnel occurred within two hours of discovery. The fire burned actively through the night and by the afternoon of August 3rd, it was 6–8 hectares in size, and was exhibiting torching in subalpine fir along with short-range spotting. Due to the high level of fire activity across the rest of the district and forest, no further firefighting resources were available for this fire. Retardant was dropped on August 3rd but was ineffective due to the heavy timber canopy. By the morning of August 4th, the fire was 18 hectares and continued to spread. The initial attack personnel were removed from the fire for safety reasons. The district then completed an Escaped Fire Situation Analysis (EFSA) and selected the contain strategy.

By August 13, the Freezeout fire was 480 hectares and burning on both sides of the wilderness boundary. There were still no firefighting resources available to implement containment actions on portions of the fire that were outside the wilderness boundary. The Region One multi-agency coordinating group listed the Freezeout fire as #17 priority out of a total of 17 large fires burning within the region. On August 14, a thunderstorm with 96 kilometer per hour winds passed over the fire area. By the following day, the fire had reached 2,000+ hectares.

With all regional fire overhead teams committed to other fires, the forest elected to put together a customized Incident Management Team to manage all of the alternative suppression strategy fires on the Powell Ranger District. This team consisted of a retired Type I Incident Commander, Type II Planning Section Chief, retired Fire Behavior Analyst, and a Type II Operations Section Chief. As management of these fires became more complex, Incident Management System (ICS) positions were added to the organization.

Suppression actions were only initiated on those portions of the fires where a threat to life and property existed or where such a threat was anticipated to occur. The main strategic objective for the Freezeout fire was to keep it from burning significant acreage outside the wilderness. Containment actions were only necessary on the north side (nonwilderness) of this fire in order to meet this objective. Typical actions included the construction of hand fireline, helicopter water drops, and aerial retardant drops. During the following two weeks, 26 additional fires were ignited on the Powell Ranger District. One of these fires (East Beaver) was also managed under a contain strategy (Table 1; Clark and Gorski 1995).

During this time, and in contrast to the management of the Powell Complex, the Bearcamp fire started on the Powell Ranger District on private timberlands from a logging operation and burned approximately 200 hectares. It was managed under a full control strategy. Initially, the team managing the Powell Complex also managed this fire. It became evident that another Incident Management Team was needed to effectively deal with the Bearcamp fire. A North Idaho Type II Incident Management Team was mobilized to this fire after the first burning period. This fire eventually cost approximately $2.2 million to suppress over a 9-day period.

In comparison, the Powell Complex cost approximately $1.2 million to manage over a 60-day period. Other large fires on the Clearwater National Forest managed by other Type II Incident Management Teams under control strategies during 1994 were the

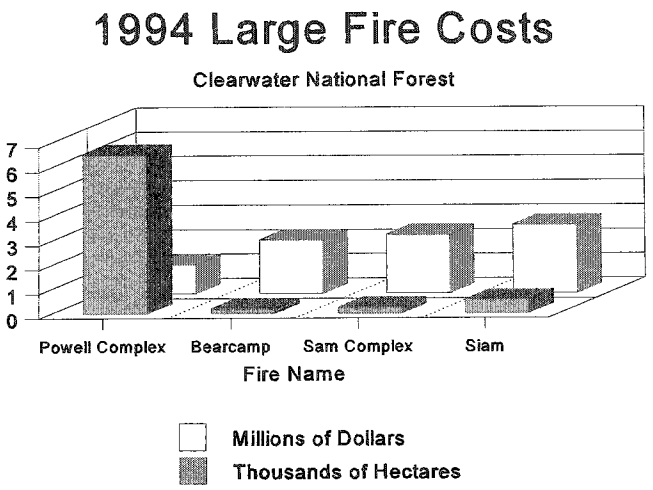

Fig. 1. Cost comparisons between management of Powell Complex contain and confine strategy fires with other large control strategy fires on the Clearwater National Forest in 1994.

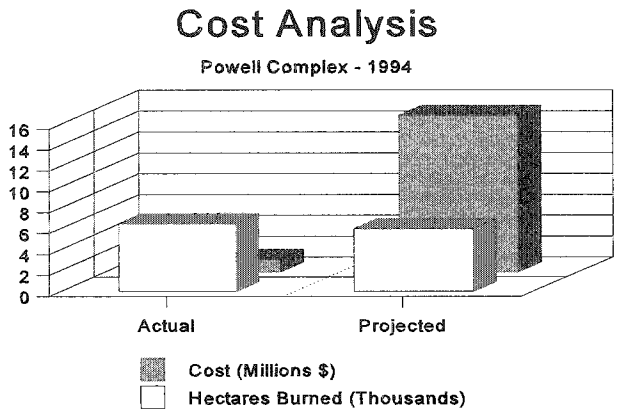

Fig. 2. Cost comparison between actual costs and acres burned on the Powell Complex versus projected total firefighting costs and acres burned if control strategies had been utilized.

250 hectare, $2.4 million dollar Sam Complex and the 560 hectare, $2.8 million dollar Siam fire (Figure 1).

It is no surprise that all of the control strategy wildfires were very costly. However, these costs were the result of strategies to meet management objectives that were different from the Powell Complex. Protection of higher commodity values, life and property, were the reasons for managing these fires under control strategies rather than under alternative suppression strategies of contain or confine. Managers must weigh the factors in making these decisions before deciding on which management strategy and tactics to apply to any fire.

During the latter part of the season, when ERC and preparedness levels dropped to acceptable levels, two prescribed natural fires were allowed to burn on the Powell Ranger District within the Selway-Bitterroot Wilderness. These two prescribed natural fires (PNF) burned a total of 78 hectares and were also managed as part of the Powell Complex.

LESSONS LEARNED

Advantages of Using Alternative Suppression Strategies

1. Less exposure of firefighters to safety hazards.

Alternative suppression strategies allowed use of fewer firefighters than full control strategies would have required. As containment actions became necessary, firefighters were used during those times when weather permitted safe and effective actions. If the decision to use control strategies on these fires had been made, several hundred more firefighters would have been needed to complete control actions. This would have required not only high exposure to extreme fire behavior but increased exposure to helicopter travel and other hazards associated with firefighting.

2. Reduced firefighting expenditures.

Alternative suppression strategies cost less than full control strategies. Much of the cost associated with the management of the Powell Complex was due to the long duration (60+ days) of the incident, aerial monitoring, and aerial support. A cost comparison analysis was conducted by the incident management team. This analysis was requested by the forest to understand the potential costs that would have been necessary had control strategies been implemented after firefighting resources became available later in the season. Actual costs associated with management of the Powell Complex were $1.2 million to manage 6,463 hectares as compared to spending over $15.0 million to manage these same fires under traditional control strategies (Figure 2). It is highly probable, due to extreme burning conditions experienced in 1994, that these fires, even under control strategies, would have still burned more than 6,000 hectares (Clark and Gorski 1995). Costs were also reduced as a result of the use of the "customized" incident management team. This team organization started small and grew as the incident increased in complexity. As complexities decreased, the size of the incident management team decreased commensurate with management needs.

3. Minimized impacts of tactic implementation to the wilderness resource.

Use of Minimum Impact Suppression Tactics were implemented. Use of alternative suppression strategies had additional minimal impact on the wilderness resource compared to traditional control strategies.

4. Allowed for better utilization of firefighting resources on higher priority fires.

The alternative suppression strategies allowed for critical firefighting resources to be utilized for emerging fires on higher priority lands. Initial attack resources were at a premium and could not be obtained from other sources. The Powell Complex was last in priority on the Regional Multi-agency Area Coordination Center listing of priority large fires. As new

fires in wilderness and other lower priority lands were discovered, the decision was made to use similar strategies on most of these new fires.

Importance of a Fire Behavior Analyst (FBA)

- FBA skills are critical for management of long-duration fires (Mitchell 1995). Understanding fire weather, fire behavior, and projecting the growth and spread of fires, is critical for firefighter safety, decisions, planning and implementing tactics.
- Having the same FBA throughout the incident gave that individual, the line officer, and the Incident Management Team the opportunity to develop confidence in short- and long-range predictions.
- The FBA was able to correlate observed fire behavior and weather conditions for fire growth projections using fire weather forecasts.
- The FBA was eventually able to predict the conditions under which significant fire spread would most likely occur.
- During late October, after all demobilization had taken place on the Powell Complex, the FBA was allowed to stay and spend about one week compiling all fire behavior related information for the final fire documentation. This information will be valuable to interpret for future use on large wilderness fires in the area.

Benefits of the Customized Incident Management Team

- *Cost Savings*—The team started small (4 positions) and was allowed to grow with the complexity of the incident. Most of the personnel used on the Powell Complex were local with the exception of a few crews later in the season. Limited suppression actions kept costs down. Most expense was due to the heavy reliance on aerial support and reconnaissance due to the inaccessibility of fires.
- *Flexibility*—Ability to develop an organization based on need. Able to put together a team that had wilderness fire management experience and skills.
- *Long-term Commitment*—Most of the personnel assigned to the Powell Complex were able to stay in place through the duration of the incident. All personnel that stayed for the duration were allowed at least 2 days off every 21 days. Several people took 3–5 days off before returning to resume their duties.
- *Building Confidence*—Each of the team members developed confidence in their own knowledge and skills associated with management of long-duration fires. Confidence was also gained among team members and with local management. It was very beneficial for team members to be able to learn from the results of decisions and actions over a relatively long-term period of fire management.

CONCLUSION

The choice of when to use alternative suppression strategies in fire management is an important decision. Implementation of these strategies may lead to a much longer incident duration compared to fires managed with traditional suppression strategies. Fire managers must be prepared for this and must also be willing to dedicate adequate support and staffing to manage these kinds of fires effectively and efficiently.

Managing a large wildfire program under alternative suppression strategies is, in many ways, as complex as managing a large PNF or control strategy fire. It may require expertise beyond what is available on a single district or forest. Each situation may not need a fully organized Incident Management Team. Flexibility in developing a "customized" team may be desirable in some cases.

It is up to us, as fire managers, to determine impacts and risks associated with making decisions that lead to the use of alternative suppression strategies. Wise use of these strategies can reduce firefighting expenditures significantly, allow for more effective and efficient use of firefighting resources, reduce resource damage resulting from suppression actions and, most importantly, decrease firefighter exposure to safety hazards.

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LITERATURE CITED

Clark, L., and M. Gorski. 1995. The Powell Complex fires, A successful implementation of alternative suppression strategies in the Selway-Bitterroot Wilderness. White paper presented at the Ecosystem Management Workshop in Spokane, Washington. Unpublished report on file, Powell Ranger District, Clearwater National Forest, Lolo, MT.

Mitchell, D. 1995. Powell Complex Review. U.S. Department of Agriculture, Forest Service, Region One. Unpublished report on file, Regional Office, Missoula, MT.