

South Canyon Fire

Ten Year Review of the Effectiveness of Planned Actions

Prepared for the Forest Service by: Safe Fire Programs, & Forest Stewardship Concepts
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South Canyon Ten Year Review:
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EXECUTIVE SUMMARY

The wildland fire community has made significant progress in implementing the corrective action items related to the South Canyon Fire. Most of the Interagency Management Review Team (IMRT) action items are implemented. In addition, annual average burnover and entrapment fatalities have dropped over forty percent since the South Canyon Fire. Discussions with individuals and focus groups indicated that improvements in the availability and accuracy of fire weather forecasts, training and hazardous fuels treatments have contributed to a safer working environment. For example, many noted that weather forecasts are more readily available and fire behavior analysts are more plentiful making predictions of problematic conditions easier to get. Focus group participants consistently rated the relatively new “Fireline Leadership” training as one of the best courses they have ever attended. Preparedness and severity actions are also seen to be responsive to fire danger and most believe that hazardous fuels management now has appropriate priority and funding. Finally, most believe there is a “Passion for Safety” present in fire operations that did not exist before and many firefighters are comfortable questioning assignments that they think are unsafe.

While significant progress has been made in implementing the South Canyon action items, concerns still exist in a number of areas. Specifically, a lack of clear, consistent interagency policies, Wildland Urban Interface strategies and definitions, general fireline policy guides such as the “Interagency Standards for Fire and Fire Aviation Operations” and training requirements were mentioned. For example, there is a serious concern about the increasing number of checklists inhibiting situational awareness.

Finally, our comparison of the South Canyon, Thirtymile and Cramer fires revealed a few critical areas needing improvement that were common to all three fires. These include (1) a lack of focus and attention on human factors, (2) negative synergy, (3) fire operation priorities, and (4) a lack of management oversight.

INTRODUCTION:

On July 6, 1994 there was a fire burning seven miles west of Glenwood Springs, Colorado. During the afternoon hours, winds increased, causing the fire to make several rapid runs with 100-foot flame lengths. The fire spotted below firefighters that were in the vicinity and moved onto steep slopes and into dense, highly flammable Gambel oak. Within minutes a wall of flame raced up the hill resulting in the deaths of fourteen firefighters.

Following the tragic South Canyon Fire incident a number of steps were taken in an attempt to prevent similar tragedies. The South Canyon Fire Interagency Accident Investigation Team investigated the circumstances surrounding the deaths and released their report on August 24, 1994. It identified causes of the accident and recommended actions that should be implemented to prevent future such occurrences. Subsequently, an Interagency Management Review Team (IMRT) was appointed to take immediate corrective actions, develop an action plan for implementing the recommendations of the investigation report, and make recommendations on related fire program management issues. The final IMRT report was published on June 26, 1995.¹

This report is designed to review progress made on the initiatives launched as a result of the South Canyon Fire and provides a foundation of facts for use during the ten year commemoration of an incident that had profound impacts on wildland fire management throughout the nation. Its primary focus is to provide insights into the long term effectiveness of solutions coming out of the Interagency Management Review Team Report.

OBJECTIVES

The objectives of this review are to determine whether the solutions, plans, initiatives and policies that resulted from the South Canyon Fire fatalities (1) have been implemented, (2) are consistently practiced, and (3) are useful to all levels of firefighting personnel. In addition, a comparison of South Canyon, Thirtymile and Cramer fires was done to identify any common factors that occurred

¹ The Final Report of the Interagency Management Review Team is available on the web at www.fs.fed.us/land/scanyon2.htm

on all three fires that may have jeopardized safety. Finally, recommendations are made to further improve wildland fire safety.

METHODOLOGY:

To determine the historical performance and current status of the actions that resulted from the South Canyon Fire we reviewed the IMRT final report, the action plan developed to address the report's recommendations and interviewed members of the South Canyon IMRT to develop a full understanding of the documented solutions, plans, initiatives, and policies that resulted from the fire. We also spoke with members of the wildland fire community to determine the long term staying power and actual utility of the solutions coming out of the IMRT report. Participants at national level meetings for incident commanders, fire planning, and fire operations were queried for their perceptions on the status of the action items. Agency administrators from across the country were briefed on the review status and asked for their insights.

In addition, focus groups were used to obtain a broad based understanding of South Canyon's influence on contemporary wildland fire safety practices.² The focus groups consisted of (1) firefighters/dispatchers, (2) fire management officers and (3) agency administrators and senior managers. We conducted three focus groups with the firefighters and dispatchers, one with the fire management officers and one with agency administrators and senior managers. Personnel from federal, state and local wildland fire agencies participated in the focus groups. The focus group participants came from across the country and represented all the geographic areas in the continental United States. We used identical questions with each group to facilitate the analysis of the responses within and between groups. This provided insights into similarities and differences across a broad spectrum of wildland fire organizations.

We conducted site visits to Storm King Mountain and the Grand Junction Dispatch Center which serves the Upper Colorado Fire Management Zone. Zone personnel were interviewed to determine changes that have occurred since 1994.

² A focus group study is a carefully planned series of questions designed to obtain perceptions of a defined area of interest in a permissive, non-threatening environment. Groups were textured to include personnel with similar expertise and relative responsibility. Open ended questions were used to stimulate active dialog on the issues as the participants see them.

Finally, an analysis of the South Canyon, Thirtymile and Cramer Fire actions was completed to identify any similar behaviors and causal factors.

COMMENDATIONS

The primary focus of this review was to determine whether long term changes have been made in wildland fire safety attitudes and practices as a result of the South Canyon Fire. We found that many believe significant progress has been made in a number of areas. These include (1) more open communication and comfort in questioning perceived unsafe practices, (2) weather information, (3) training, (4) hazardous fuels treatments and (5) funding.

We asked focus group participants if they were comfortable questioning strategies and tactics that they believed were unsafe. They universally replied in the affirmative. They also acknowledged the need to provide explanations to their supervisors for their unrest, as well as providing a recommended alternative action.

In addition, we found that substantial strides have been made in fire weather forecast availability and accuracy. Many people said that designated wildfire weather meteorologists throughout the country have improved their service dramatically. Furthermore, having meteorologists assigned to geographic area coordination centers has also facilitated preparedness and pre-positioning of resources to potential trouble areas. Many people also said that fire behavior analysts are likewise readily available and well utilized. For example, Geographic Area Coordination Centers (GACC) are cited as scheduling a fire behavior (FBAN) for use during the fire season. These FBAN's are used to supplement reports and coordinate with meteorologists.

Focus group participants consistently rated "Fireline Leadership" training provided by Mission-Centered Solutions, Inc., as one of the best they have ever attended. The credibility, energy and quality of instructors were all mentioned in praise of the session. Development of this training program was rapid and the evolution of course content and approach designed to meet wildland firefighter's needs has been impressive. As of mid 2004, 5,145 first level firefighters have been

trained.³ Other helpful training was also mentioned. For example, several units are currently using large fans or aircraft prop blast to simulate more realistic shelter deployment conditions during training. Practicing shelter deployment in a sterile, level, benign environment, can cause over confidence in ones ability to use the shelter of last resort. Adding wind and airborne debris provides a dose of reality that reinforces the tentative nature of fire shelter deployment.

Another highly effective training technique is having a sobering impact on rookie smokejumpers in Missoula, Montana. All rookies spend some quality time with seasoned smokejumpers who survived South Canyon. The survivors describe the situation and discuss the dynamics that caused them to knowingly go into harms way. The discussion has a profound effect on new recruits. This is a powerful session that may need to be spread beyond the Missoula Smokejumper Base.

Understanding the role hazardous fuels play in wildland firefighter safety is at an all time high. Evidence of this understanding was cited in all focus groups, which represented all levels of the wildland fire community. Fuel treatment was the number one recommendation from more than 1,000 firefighters involved in the TriData safety survey.⁴ Furthermore, the Healthy Forest Restoration Act of 2003 also acknowledges the need for landscape level fuel management and significant funding is now available for fuel treatment. While many agencies are making progress conducting fuel treatments outside the wildland urban interface, communities such as Ruidoso in New Mexico, Flagstaff , Prescott and Heber/Overgaard in Arizona and South Platte complex in Colorado are proactively addressing fuel treatment in the wildland urban interface and have developed ten year fuel treatment plans. This level of structure and forward thinking is a good example for other communities dealing with the wildland urban interface.

We also found that the Lookouts, Communications, Escape Routes and Safety Zones (LCES) mantra has been assimilated into the core of wildland fire safety. It incorporates most of the Ten Standard Fire Orders and is easy to remember.

³ Data obtained from the National Interagency Fire Center.

⁴ TriData was an exhaustive interagency study of wildland firefighting safety that used interview and survey techniques to develop recommendations on how to improve safety.

After Action Reviews (AAR) are being used immediately following suppression and prescribed fire activities to critique operational performance while still fresh in firefighters' minds. Use of this approach has improved crew and team communication. It is a superb forum to reflect on safety issues and improve performance.

“Incident Response Pocket Guide” was also mentioned frequently as a ready source of information in a convenient package. It is small, light and durable – all traits that encourage its inclusion in the everyday tools carried by today's wildland firefighter.

SIGNIFICANT PROGRESS HAS BEEN MADE IN IMPLEMENTING THE IMRT ACTION PLAN BUT SOME CONCERNS STILL EXIST

Immediate actions taken after South Canyon established a foundation for quick change and future efforts. The IMRT prepared a plan to implement 35 corrective actions, most of which were expected to be accomplished prior to the 1995 fire season. However, the team did not set specific dates for the completion of the action items. Since the issuance of the action plan, most of the corrective actions have been implemented, resulting in many positive changes. For example, there is a strong feeling among those that we spoke with that safety has improved since 1994. Individuals understand that they are responsible for their own safety and that of others and many stated that a cultural shift to a safer thinking and acting fire organization is occurring. Despite this progress some concerns still exist including management, policy and training issues.

Implementation of the Action Items Yields Encouraging Results

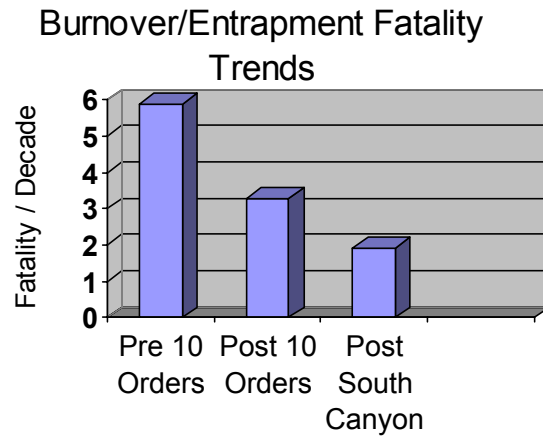
The IMRT action plan included corrective actions in the areas of training, policy and interagency actions, among others. The majority of these actions were implemented and have led to constructive changes in many areas with the most notable being availability of weather information, fire danger recognition, fire behavior prediction and preparedness. For example, many people said that fire weather information and personnel are readily available on a daily basis in most cases. In addition, the “Safety is Job #1” initiative has evolved into the daily operating concept “Safety First” and the practice of “6 Minutes for Safety.” Creating a passion for safety is clearly known as a

concept within the fire community. However, attitudes vary from “It’s alive and doing well” to, “passion” not being an appropriate term. There were clear expressions of openness about safety and individuals are comfortable questioning actions and seeking answers. Furthermore, turning down assignments perceived as unsafe is also an acceptable practice, if properly done and more senior level managers are comfortable being questioned about safety. Preparedness receives two very positive responses. Specifically, the National Fire Plan (NFP) has resulted in increased staffing and equipment and the severity and pre-positioning processes is seen as well managed—both of which have improved initial attack capabilities during extreme fire conditions.

In addition, certain items have strong support including “After Action Reviews” (AAR) which are a tool used often, to spontaneously critique fire activities at the end of a shift or fire and are considered to be very effective. “Incident Pocket Response Guide” and “Pocket Cards” are also popular because they summarize the abundant processes and checklists in a convenient size and format.

Finally, analyses of trends in annual wildfire fatalities provide another perspective on the effectiveness of the actions prescribed in the IMRT. There are two, notable, positive changes on the historical trend line that coincide with fresh safety initiatives. First there was a 56% reduction in fireline fatalities following the creation of the Ten Standard Fire Orders. Second, there has been an additional reduction of 42% since the South Canyon Fire. Reductions have been due to a wide variety of factors such as improved communications, advanced personal protective equipment and a clearer focus on safety implications in strategy and tactics. See Chart 1: Fireline Fatality Trends All Agencies.

Chart 1: Fireline Fatality Trends All Agencies



Source: Analysis of Wildland Fire Statistics 3/29/2004

www.nifc.gov/stats/wildlandfirestats.html

Although Much Progress Has Occurred, Areas of Concern Still Exist

The IMRT found an urgent need to create a passion for safe firefighting practices through leaders showing a clear and steadfast commitment to safety and the need to improve accountability among agency leaders, fire managers, and firefighters. The team emphasized the importance of training and qualifications for agency managers at all levels of wildland fire management. However, notable concerns were expressed by both firefighters and upper level management concerning agency administrators and line officer's qualifications and training. Agency administrators are concerned about their responsibilities but are often lacking skills to address the situations they must manage. They stated that they have too much to do, worry about liability, and are predisposed to trust fire managers because they do not have the background to understand the situations. Fire managers try to support them but said that communications can be difficult due to differences in knowledge, skills and abilities.

Monitoring performance creates some of the strongest reactions from people. They want and believe in accountability. Many said that they hear rumors of disciplinary actions but the circumstances surrounding the actions and final outcomes are seldom known. In addition, they see

the current monitoring process as being totally reactive without a clear focus on being proactive. The result is a set of processes and checklists that create a paper trail instead of increased training or experience growth for fire fighters. Many said that the processes and checklists have grown far beyond the ability of people to manage and that they cannot keep up with the rapid and growing changes. Furthermore, it is strongly believed that reviews and actions are OSHA driven processes instead of a search for causal factors that would allow agencies to handle situations appropriately.

We also found that a struggle still exists on the line about who is responsible for individual safety. The concept of “an individual is responsible for his/her own safety up to the point that their experience and training allows” is evolving. It is not easy for some to deal with this concept, especially the young and inexperienced. Finally, the variety of “Incident Organizers”, used for size up and initial attack, is noted as confusing and time consuming in an already volatile, stressful situation. This introduces the concept of “Negative Synergy” (for later discussion).

There is a serious concern about the large number of checklists inhibiting situational awareness. For example, in the “Incident Response Pocket Guide” there are checklists for Risk Management Process, LCES Checklist and Downhill Checklist to name just a few. People prefer to build more on the 10/18/LCES rather than deal with all the additional processes.

Lack of clear, consistent interagency policies was often referred to as an element in need of further improvement. The Wildland Urban Interface (WUI) and general fireline policy guides such as the “RED BOOK” (Interagency Standards for Fire and Fire Aviation Operations) and training requirements, were cited as specific examples. For instance, no consistent, long term, interagency strategies or policies have been developed for wildland fire management in the WUI. This applies to both the wildfire and fuels programs. Many said that this is creating serious problems with structural protection and community hazard mitigation work.

National Wildfire Coordinating Group (NWCG) work, rest and rotation guides were also mentioned as too stringent and a barrier to flexibility. However, almost everyone recognized the need for guidelines in this very important area. Flexibilities in shift length standards were being developed while the focus groups were convening. NWCG revised these standards on February 6, 2004.

Fuels management, especially since the NFP, is seen as a major, positive change in the fire program. It is cited as being a significant response to the TriData Study and answers the number one concern of firefighters in that study. However, concerns are growing about the ability to meet the annual targets and the lack of dedicated fuels management people to do the job.

Accident reviews and investigations are key and powerful tools and are perceived as the only approach being used to deal with loss of life or serious injury. While accident investigation procedures are better defined and understood they are perceived as a totally reactive process that results in more action items than people can assimilate. Many recognize the need for more proactive approaches to safety and this is part of a cultural shift that is hopeful. For example, people are now questioning how we know that because a fire was contained on initial attack, without any injuries, that safety performance was good and the 10/18/LCES were handled properly? Was it just luck? Or did the skill and training of the people involved cause the elements of safe fire operations to come together in an efficient and effective manner? Comments favored a more proactive method of learning that focuses on less traumatic episodes of lapses in fire safety.

Almost all focus groups believe the training program must give more emphasis to wildland firefighting basics and spend more effort at the firefighter level of the organization. Many said that with the high expectations for safety performance, firefighters need training focused on fireline leadership and decision making early in their career development. Frequently cited was the “Fireline Leadership” training with focus groups articulating a strong desire to expand its availability throughout the firefighter cadre. Continuing the contract arrangement will perpetuate the quality of the session. In addition, focus group participants stressed that most loss of life occurs on extended attack fires prompting many to say that there needs to be an additional training emphasis on the transition period. Terrain, drought, fuels and extended attack periods were also seen as major cumulative hazards. Emphasis items suggested include, crew cohesion, situational awareness and agency administrator involvement.

Many people also said consolidated organizations or reduced staffing often cause confusion in management oversight, which is viewed as one common element in situations where there is a loss

of life. For example, during multiple fire periods, with complexity at its maximum, there is increased pressure on all fire management and agency administrator personnel. Additional contributing factors include the large time demands required to complete the Wildland Fire Situation Analysis (WFSA), lower availability of personnel to staff large fires, political pressures and staggering amounts of process to deal with on a daily basis. When these elements collide they can become overwhelming, creating an environment of inattention and missed opportunities.

A COMPARISON OF SOUTH CANYON, THIRTYMILE AND CRAMER FIRE REVIEWS REVEALS REOCCURRING, SIMILAR OVERSIGHTS

In his “South Canyon Revisited: Lessons from Highly Reliable Organizations”, Weick (1995) describes an “ongoing struggle for alertness” that hauntingly permeates the investigation reports for Thirtymile and Cramer fatalities. There are many troubling similarities found among the South Canyon, Thirtymile and Cramer fires. An extensive comparison of the causal factors associated with each fire indicates that the 10 Standard Fire Orders, LCES and the 18 Watchout Situations were perpetually compromised. Intensifying fire behavior was not noticed and tactics were not adjusted even when firefighters did pick up on, the sometimes not so subtle, signals of the worsening situation.

Because non-fatal entrapments and burnovers have only recently started being tracked, it is difficult to know if these three multiple fatality fires indicate a systemic problem or if they are simply infrequent lapses in an otherwise safe operation. As noted earlier, wildfire burnover and entrapment fatalities have decreased by over 40% since South Canyon, but fatalities still have the same common denominators. Complete analysis of the situation is further aggravated by the lack of information on near misses. Although we cannot be sure if the problems are systemic or simply infrequent lapses in an otherwise safe operation we do know that inadequate situational awareness, poor decision making and weak crew cohesiveness are significant factors that are prevalent throughout the wildland fire community. Focus group participants validated that conclusion.

Based on the errors and weaknesses identified above, we determined that there are four areas that appear to have the greatest potential to mitigate the issues and improve fireline safety. These

include (1) human factors, (2) addressing negative synergy, (3) fire operations and (4) agency administrator oversight.

Human Factors Deserve More Attention

Two areas of human factors that deserve more attention are extended attack and individual skills enhancement. Extended attack is a tumultuous period that is often the time when multiple fatalities occur. All three fires were in extended attack mode and were transitioning from simple to more complex incidents when the fatalities occurred. Crew activity was also in transition from relatively independent action to a need for a more coordinated approach. This is a highly fluid period when communications are challenging and stress is high. The US Army has long understood that when an individual is under stress they can only remember three things and respond to them reliably.

Only a small amount of formal training is available to deal with the extended attack period and experience in handling transitions from initial to extended attack is limited and seldom practiced. Fundamental principles are not clear as to when it occurs, how to manage it and who pays attention to it. As an example, agency administrators are required to do “Delegations of Authority” and a WFSA for large fires and must pay attention to costs and strategies. No similar emphasis focuses their attention on an extended attack fire when it is occurring and prior to its becoming a large fire.

Failures to act on what appear to be readily identifiable hazardous situations are also cited as non compliance with the 10 Standard Fire Orders & 18 Watch Out Situations. Continued failure to recognize signals indicating a hazardous situation may be a sign of absentmindedness or an inability to assimilate all the observations and act on them in a thoughtful way. We believe that stress, fatigue and pressure lead to a breakdown in concentration and attention to details. Perhaps it is time to update the fire safety standards to recognize human limitations.

Individual skill enhancement needs to focus on situational awareness as it affects decision making and crew cohesion during highly dynamic and dangerous fires in transition. “Fireline Leadership” is considered an excellent course and addresses situational awareness and decision fundamentals. However, decision making is not a component in most NWCG courses. People are expected to

develop leadership acumen by piecing together experience and course work while combining that with inherent leadership and decision making abilities. Emphasis needs to be placed on developing these skills early in the firefighter's career.

Crew cohesion is currently an elusive quality on many fire crews. This "cohesion is "made" by individual workers themselves when they establish agreements about the rules that govern a host of their day-to-day work practices" (Driessen, 2002). These expectations govern such things as work pace, rest periods, decisionmaking, humor, warnings of danger, requests for help, assistance for fellow crew members, complaints, sharing food and other practical matters that bear directly on maintaining their cohesion. Cohesion, and the protection it affords individual workers, comes about only after crews have tested and negotiated acceptable norms governing their work practices. It takes time for this to happen. Driessen (1986, 1996) found that it takes six to eight weeks for individual seasonal workers to "click" into crews. By that time many fire crews are getting ready to disband.

Understanding human factors appears to be a void in the current fire training system that has become more obvious with the totality of these three recent multiple fatality fires. There is a need for a more robust understanding of human behaviors during stressful emergency activities. Missoula Technology and Development Center - Fire Management Program, is currently working on intra-crew communications and crew cohesion with a focus on entrapment avoidance on emerging incidents.

Negative Synergy is Created by Process and Action Items

Synergy is the concept that the whole is greater than the sum of the parts and is generally seen as a positive effect. While interviewing people for this review it became clear that some action items resulting from agency responses to South Canyon, Thirtymile and Cramer are generally not moving the fire community forward. They are, in fact, creating a process oriented culture that is unable to keep up with all the change. This impact in a negative direction is called negative synergy.

The focus on process vs. performance, programmatic fixes rather than performance improvements, and reactive responses to "violations" of the 10/18/LCES rather than proactive actions results in

accident investigations moving field operations in a negative direction. There appears to be a preoccupation with process which causes a subsequent reduction in time and sensitivity to understand unfolding events. In fact, adherence to process is often the measure of success or failure, rather than the quality and impact of decisions made on and in support of the fireline.

Safety performance is not adequately measured on a daily, incident or seasonal basis. Performance ratings for incidents or for normal annual evaluations are seen as a barrier to improving the fire organization. There are too many indications that if a supervisor rates an individual accurately, the rater will be penalized, not the poor performer. Hence programmatic fixes are used because they are easier to handle and are more acceptable organizationally.

There is an interest in reviewing performance based on the 10/18/LCES, before during and after the incident and to document near misses as a learning tool. Job aids are meant to improve job performance. However, it has become a burden to use the job aids. **DO NOT ADD MORE CHECKLISTS TO ACCOMPLISH ANY OF THIS!** Instead, take a hard look at how to reduce them. Prolific checklists duplicate one another and are a symptom of negative synergy causing unintended consequences.

Fire Operations Illustrate Some Troubling Trends

Some focus group participants think there is a “new wave” of firefighting tactics emerging. The concept of fighting fire at night, when fire behavior is less intense, is seen as a fresh revelation. The fact that it is seen as a “new wave” is disturbing. Not staffing at night is the result of a reaction to fatalities that occurred at night due to falling snags in the 1980s and early 90s. However, universally avoiding night time operations, results in higher exposure to intense fire behavior during the day. Coupled with the set schedules for managing large incidents, it is not unusual for crews to reach the line at 10:00 a.m. Daily fire suppression activities that do not start until well into the morning or even in the afternoon can make the job much more difficult and dangerous. For example, the burnovers that occurred at South Canyon, Thirtymile and Cramer all happened at or near the peak of the day’s burning period. This contributes to increased costs and hazard exposure. In addition, unrealistic expectations can also lead to dangerous situations. Specifically, the crews on the South Canyon and Cramer fires were placed in the fire’s path and expected to produce instant

results. Finally, poorly timed briefings and other incident management activities tend to slow progress on the fireline. The cumulative impact of numerous well meaning fixes has proven to be paradoxically counter productive in some cases.

Lack of Sufficient Management Oversight Was a Common Theme at All Three Fires

All three fires happened during periods when there were multiple fires ongoing, causing management oversight to be spread thin. Two of the fires involved units that had recognized levels of unrest in the fire organization. Despite findings that manager's performance was flawed at all of the fires, area administrators are still having difficulties providing meaningful guidance and oversight to the wildland fire and fuels management programs. Given the potential loss of life and contributions that fire and fuels make to the workload and cost pools, more emphasis needs to be focused on fire management programs by agency administrators.

Fire management oversight can be compromised when highly qualified fire management personnel are away filling positions on type 1 & 2 incidents at other locations. When these people leave for a supervisory team assignment, it often leaves a void on their home unit. This is because the depth or bench strength has been eroding for some time due to fewer employees believing that they have a responsibility to develop fire management skills that would prepare them for emergency fire assignments.

One action item in the South Canyon IMRT report called for including fire management as an evaluation criterion in vacancy announcements for agency administrators and incorporating it into their performance elements. However, a recent quick canvas of vacancy announcements on the OPM web site showed that only seventeen percent of the agency administrators' vacancy announcements included such evaluation criteria. Failure to meet this relatively simple requirement is perhaps the most telling example of bureaucracy inaction. It appears that we were more successful in changing the entire fire management culture than we have been in getting Human Resource Management to implement a requirement. OSHA has cited the US Forest Service twice, once after Thirtymile and again after Cramer, for this gross malfeasance.

ADDITIONAL FINDINGS

- ◆ “SAFENET”, a safety reporting opportunity for ground firefighters, “SAFECOM” a safety reporting opportunity for aviation managers and the “Lessons Learned” Center are steps toward achieving a better understanding of the discrete aspects of safe fire operations. However, SAFENET is a voluntary program that relies on an individual to dedicate the time and effort to report safety concerns and it has not become a vital part of ground fire safety operations, course correction and hazard identification. This does not provide a timely nor accurate measure of safety problems. If the Lessons Learned Center, SAFENET and SAFECOM processes can be merged, tracking of near misses can contribute to increased awareness of safety trends.

- ◆ Interagency policy differences in training, qualifications and operations are causing unproductive confusion at the ground level. While interagency cooperation is valued and encouraged, many of the caveats in the various guides and handbooks actually create voids. Most field level fire personnel feel that interagency collaboration is important and happens in spite of interagency policy differences. There is also a feeling that agency turf battles are the cause of local, state, regional and national policy differences.

While, interagency cooperation is a recognized method of promoting safe, efficient and effective fire operations, responses to fatalities have resulted in single agency actions and policies with attempts to establish uniform policies being fragmented. Examples of this incompatibility are the RED BOOKS and the Type III IC simulation training. Currently, there are two Red Books. One is the Fireline Handbook that is part of the Forest Service manual and handbook system. The other Red Book is the Interagency Standards for Fire and Fire Aviation Operations signed by Fire Directors and Assistant Fire Directors of the Bureau of Land Management (BLM), Fish & Wildlife Service (FWS), National Park Service (NPS) and the USDA Forest Service. Bureau of Indian Affairs (BIA) is not a signatory of this book. The Interagency Standards of Fire and Fire Aviation Operations is seen as a tool with great potential. However, it often provides a listing of individual agency policies and procedures and has not resulted in a set of cohesive policies and procedures that streamline interagency operations. The same problems are evident in the day to day operations as a

result of the differences of 310-1 Interagency Training and Qualifications Handbook and 5109.17 Fire and Aviation Management Training and Qualifications Standards Handbook. These differences in policies and procedures are perceived to be major barriers to effective interagency incident management.

- ◆ Another example of inconsistent policies and procedures was the new Forest Service requirement that all Type III ICs be recertified via a simulation before the 2004 fire season. Those that do not participate will not be eligible to perform Type III IC duties, which may result in a reduction in the number of Type III ICs available for assignment in the near term. This is seen as punitive by some ICs and there are an undetermined number of personnel that are choosing not to participate in the simulation exercise, choosing instead to let their Type III IC qualifications expire. There were many others who perceived this exercise as greatly advantageous, an excellent learning tool, and an effective screening of weak Type III ICs. One focus group asked “If I’m on a fire with a Department of Interior Type III IC that has not been through the simulation exercise this summer; am I less safe?” This is an example of an individual agency’s unilateral policy causing unrest in an inherently interagency environment.
- ◆ Contracting for fire suppression resources is also a persistent issue. Focus groups consistently mentioned concern for contract crew safety and its potential effects on agency crews. Training, qualifications, performance and pay are the key issues and sources of concern.
- ◆ Simultaneous fire suppression and fuels treatment responsibilities are also a concern because some believe that they cannot accomplish both at the same time in a safe and efficient manner. Previously, fire personnel used fuels management projects during low fire danger periods or during pre and post fire season. In addition, many said that they also are not used to navigating the project planning maze of NEPA and the interdisciplinary coordination necessary to carry out the fuel treatments. While fire people are feeling good about the emphasis on fuels management, they are also feeling unusual pressure to produce acres of treatment. Several Regional Foresters were quoted as saying “Failure to meet fuels targets is not an option”. This is seen as undue pressure, especially in the prescribed burning arena.

Focus group participants pointed out that there is a disconnect between funding for fuels and targets. It appears there is nearly a 600% increase in funding for fuels since the inception of the National Fire Plan (NFP). However, there is only about a 140% increase in accomplishment according to NFP reports. The project planning morass and cost pools assessments are seen as two of the primary factors impacting ability to produce accomplishments on the ground. For example, focus group participants point out there is a difference in cost pools assessing appropriations in fire management. Examples were cited of 15-65% for Forest Service cost pools and 10-15% for Department of Interior agency cost pools. This financial situation, created primarily by fixed costs, results in fewer resources to do the job on the ground and is perceived as a major influence on safety. The US Department of Interior has a policy that limits overhead assessments to 10% of their total fire funding so a much higher percentage of DOI fire funds actually reach the ground.

- ◆ According to field personnel, certain radios do not perform well. This was mentioned in enough focus groups to be of concern. These radios were specifically mentioned as a safety problem with reliability being the primary concern.
- ◆ Concerns also exist regarding a lack of connection between task books and red card qualifications. Fire Qualification Review Committees are not consistent in their approaches to certifying qualifications and abilities of individuals. Task books are not being monitored and are becoming another checklist. There is continued concern that the process is an NWCG system that was not built, nor easily used, to deal with retired or private persons. The system is rigid and becomes bogged down in details.

Task books for certification of fire training are a good tool but there is a feeling that many folks are passing through the system without constructive critique. Some entities or cooperating agencies have red card committees that screen qualifications to assure that training, experience, and aptitude are all in place for the qualifications approved. Other places and agencies seem to be rather secretive about qualifications determinations and produce personnel of questionable quality.

- ◆ The WFSA is seen as an opportunity for agency administrators to provide clear intent for management of an incident. However, the current WFSA is inadequate for many situations and often creates confusion between the agency administrator and fire personnel. Focus group participants pointed out that reviews such as Strategic Assessment and Cost reviews and After Action Reviews have shown differences in understanding of resource objectives and accomplishments on incidents.
- ◆ A visit to Grand Junction and Glenwood Springs demonstrated significant changes in both organizations. The Zone Dispatch Center is now directly linked with the Rocky Mountain Coordination system. The BLM, USFS, and Colorado State Forest Service fire programs are combined and supervised by a board of agency administrators. Both dispatch and fire management organizations have made significant strides since the South Canyon event.

RECOMMENDATIONS:

Human Factors:

Place more training emphasis on human factors that play a role in decision making and leadership under stress. Also expand the use of “After Action Reviews”, simulations and scenarios. Training should include enough repetition to make individuals response to emergencies second nature.

Develop virtual reality exercises, based on past fires, with pass or fail tests for all first line supervisors.

Expand the use of simulations to improve situational awareness, fireline leadership, and decision making. Expand the use of low tech sand tables, leadership reaction courses, and tactical decision gaming to reinforce basic firefighting principles. Develop simulations that can be run on desktop or laptop computers to reach broadest audience with common technology. Appropriate use of technology can increase training availability and reduce costs.

Negative Synergy:

Review the actions items from South Canyon, Thirtymile, and Cramer fires to determine those that are redundant. Use this information to reduce prescriptive policies, processes and checklists that distract from situational awareness and decision making time for IC's and crew leaders in initial and extended attack.

Consider reconfiguring the 10/18/LCES to remove redundancies and improve utility.

Develop operating norms aligned with high reliability organizations' concepts articulated in "Managing the Unexpected" (Weick & Sutcliffe, 2001)

Fire Operations:

Strengthen strategy and tactics training regarding the transition period from initial to extended attack.

Expect crews to be on the line productively working by sunrise. Arrange briefings to accommodate 0600 line construction.

Reexamine the utility of night shifts where terrain, snags and access allow for safe fire operations. Capitalize on night time conditions, when safely feasible, to minimize crew exposure to extreme fire behavior.

Look at the rigors of Incident Management Team schedules and contracts and adjust them to meet fire line needs.

Management Oversight:

Implement the policies developed after South Canyon & Thirtymile to include fire management proficiencies in agency administrator evaluation criteria and performance standards.

Increase the fire knowledge, skills and abilities requirements for agency administrators in areas where fire management is a significant program. This should include experience and training. Offer additional fire and fuels management familiarity sessions for area administrators with emphasis on peer success stories and field examples.

Proactive Vs. Reactive Reviews:

Insert “After Action Reviews” as part of 100-200 level training. Elevate and strengthen the training and importance of 10/18/LCES.

Implement guide lines to set incident objectives for all fires and pre determine key trigger points.

Implement near miss tracking to improve safety actions prior to fatalities. Establish a near miss tracking program at the Lessons Learned Center.

Interagency Inconsistencies:

The five federal fire agencies must reaffirm what interagency cooperation means and live by those agreements in the development of consistent policies, procedures and guidelines.

Agree on the definition of WUI and develop consistent, long term, interagency strategies and policies for wildland fire management within the interface zone.

Clarify and implement a policy that defines structural protection and roles and responsibilities.

Combine PMS 310-1 and FSH 5109.17.

Consolidate interagency standards and procedures into one red book and have it signed by agency heads. Delete extraneous books. The alternative is to revert to single agency books which will further aggravate interagency cooperation.

Reduce the number of incident organizers and checklists.

Others:

Continue the efforts to strengthen the performance of contract crews and engine modules.

Develop, with private enterprise, a system to certify contractors qualifications for all positions in the red card system.

Reduce USDA Forest Service cost pools to responsible and acceptable levels that are more in line with Department of Interior agencies, to focus more energy on the ground in fire management.

Continue to combine and streamline the WFSA and Wildland Fire Implementation Plan (WFIP) processes.

Appendix:

Focus Group Questions

Focus Group Questions

South Canyon Follow-up

- 1 - What do you see that indicates there is a “passion for safety” in the wildland fire program?
- 2 – Does leadership set an example and demonstrate a clear commitment to wildfire safety? If so how is it manifested?
- 3 – Do agency administrators take responsibility for strategic management in wildland fire? Provide some examples.
- 4 – Do you believe that personnel at all levels of the wildland fire organization are held accountable for their performance? What do you base your answer upon?
- 5 – Are you comfortable questioning strategy and tactics that you believe are unsafe?
(Or) Do you feel comfortable being questioned about strategy and tactics that subordinates believe are unsafe?
- 6 – Has there been any significant change in fuel management in the last ten years? Provide some examples.
- 7 – Rate both, the availability and accuracy of fire weather forecasts on a scale from 1-10 with 10 being the best
- 8 – What do you see that indicates that there has been a change in preparedness activities in the last ten years?
- 9 – Do you believe that there is a consistent, long term strategy and/or policy for wildland fire management in the WUI? Explain.
- 10 – Do you believe that you work in a safe, efficient & effective wildland fire suppression organization? Explain the basis for your answer.
- 11 – Is there something we should have asked you that we have not?
- 12 – Who is ultimately responsible for your safety on the fireline?

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