

# **Questions and Answers for the Thirtymile Fire Accident Investigation Team's Report**

**September 25, 2001**

## **Firefighter Training**

### **Q1: What are the eligibility requirements to be a firefighter?**

To be eligible to apply for a firefighter position you must be a U.S citizen and at least 18 years old to perform hazardous work. Maximum entry age for individuals applying for permanent primary firefighter positions is 35 unless prior service is creditable. There are no age limits for individuals applying for temporary positions.

Applicants hired for firefighter positions are required to pass the work capacity test (WCT) as condition of employment. The WCT is a test administered to measure the fitness level for duties associated with firefighting positions. The "arduous" level requires a firefighter to be able to carry a 45lb pack for three miles in 45 minutes or less.

### **Q2: What is the basic level of training and experience required to be a firefighter?**

Entry-level firefighters are required to complete the basic wildland firefighting training, which constitutes 32 hours of classroom instruction and 8 hours of field training. Training courses cover:

- Introduction to Incident Command System (I-100) - includes incident command organization.
- Wildland Fire Suppression Orientation (S-110)- introduces new firefighters to basic firefighting operations.
- Entry-level firefighter skills (S-130) - includes instruction in safety, tools and equipment, firing devices, use of maps, securing a control line, and fire suppression methods.
- Introduction to Wildland Fire Behavior (S-190) - instruction in the primary environmental factors, includes weather, fuels and fire behavior.
- Standards for Survival (supplement to S-130) - includes training in fire shelter deployment, identification of escape routes and safety zones, use of personal protective gear, the 10 Standard Fire Orders, and the 18 Watch Out Situations, and LCES: Lookouts, Communication, Escape Routes, and Safety Zones.

Some positions may require a drug test and a Commercial Drivers License (CDL) as a condition of employment.

### **Q3: Do you think this is adequate training?**

The required 32 hours of classroom instruction, 8 hours of field training and the successful completion of the work capacity test at the arduous level is deemed as the appropriate training for entry-level firefighters.

**Q4: What was the required training for the crewmembers of the NWR#6?**

Training requirements for firefighter type 2 (FFT2) includes completion of the basic wildland firefighting training--32 hours of classroom instruction, and 8 hours of field training and the successful completion of the work capacity test at the arduous level.

Training requirements for advanced firefighter/squad boss, FFT1, includes all courses for FFT2 and:

- Advanced Firefighter Training
- Supervisory concepts and Techniques
- Portable Pumps and Waters Use
- Wildfire Power Saws

Training requirements for crew boss position, includes all courses for FFT1 and:

- Crew Boss
- Intermediate Wildland Fire Behavior
- Ignition Operations
- Interagency Business Management
- Basic Air Operations

The positions of the NWR#6 crew at the time of the Thirtymile Fire were:

- Basic firefighter (FFT2) - 12
- Advanced firefighter (FFT1) – 4
- Squad boss – 3
- Crew boss trainee – 1
- Crew boss trainer – 1

**Q5: Did crewmembers meet the training requirements for their positions and were they properly documented?**

Firefighters assigned to the Thirtymile Fire had the required preseason training and screening and all had completed the refresher or basic 32-hour course and work capacity test. All but two members of the NWR#6 had completed the required training for their incident positions. It was undetermined whether two individuals had completed their training, as training records were not kept on temporary personnel.

The NWR#6 crew boss trainee’s training records show him being squad boss-qualified under the pre-2000 qualification system and lacking only one of nine required courses as a crew boss trainee under the current qualification system.

There is no evidence showing updates to the red card database to perform individual qualification reviews for the new system under Forest Service Handbook 5109.17 beginning in May of 2000 as compared to qualifications under the old system. Some individuals were “caught between” qualification systems. Also, the Naches RD did not keep training records on temporary employees. There were no management overrides to show that required courses were “grand fathered” to maintain an individual’s qualifications.

**Q6: Did the individuals who acted as Incident Commander have the necessary and required training, experience and skill level needed to perform the duties of the position?**

There were three incident commanders in charge of their respective stage of operations during the initial and extended attack phases of the Thirtymile Fire. All three individuals had the required training and experience for the position.

**Fire Shelter Basics**

**Q7: What is a fire shelter?**

Looking very much like an aluminum foil pup tent, the fire shelter is required to be carried by each firefighter. This aluminized tent offers protection by means of reflecting radiant heat and providing a volume of breathable air in a fire entrapment situation. Fire shelters should only be used in life-threatening situations, as a last resort.

**Q8: Describe the scenario of a shelter deployment?**

Shelters are deployed in life threatening situations. Shelter deployment training specifies that firefighters deploy shelters in a large area that is free of fuels if possible. If time permits firefighters may clear an area of grasses and other fine fuels. Optimum deployment sites include gravel or paved roads, areas cleared by dozers to bare mineral soil, previously burned, or “black” areas with no residual fuel, or in areas firefighters have cleared themselves. Deployment sites that should be avoided include areas where shelters could be exposed to flames or convective heat -- such as chimneys, steep slopes, and draws. Firefighters avoid sites with grasses, fine fuels, ground litter, and leave equipment outside and away from their shelter such as fuseses that can ignite and burn the shelter.

Firefighters remove the shelter from its container, stand underneath the shelter, and then place their hands and feet in the straps at each corner of the shelter. They then lower their body and lie on the ground on their stomach with their feet toward the advancing fire. Air trapped inside the tent is maintained at a cooler temperature than the surrounding fire because of the reflective material contained in the shelter's fabric. This trapped cool air protects the firefighters' lungs from the hot air of the fire and the shelter shields them from the flames. Firefighters remain in the shelters until notified that conditions are safe.

**Q9: What are you doing to improve fire shelters and training?**

The Missoula Technology Development Center has been working with personnel from NASA, the Army Research Laboratory, the National Institute of Standards and Technology, U.S. Navy Research at Natick, Mass., Underwriter’s Laboratories, the University of Alberta Combustion and Environment Group, and many others, including scores of representatives of private industry to pull together available material and design options for fire shelters. The Center contracted with the University of Alberta to begin small-scale comparative screening in June 2001, and based on these results, will begin full-scale fire shelter testing in September 2001. All promising shelters submitted by that time will be tested. By testing all promising shelters we give a fair chance to all those who have worked hard on fire shelter development and who have provided shelters or materials for testing.

**Q10: Why isn't the "Roth" improved shelter from Storm King Technologies being used?**

The small-scale shelter testing being conducted by the Missoula Technology Development Center and the University of Alberta includes the Roth shelter from Storm King Mountain Technologies. The Roth Shelter is being tested by the Missoula Technology Development Center.

**Q11: Will shelter use instructions, practices and simulation procedures be augmented?**

Standards for shelter training are set by the National Wildfire Coordinating Group (NWCG), an operational group designed to coordinate programs of the participating wildfire management agencies including representatives from the Bureau of Indian Affairs, US Forest Service, US Fish and Wildlife Service, National Park Service, Intertribal Timber Council, Bureau of Land Management, National Interagency Fire Center, National Association of State Foresters, and the Federal Emergency Management Agency (US Fire Administration). The NWCG Training Work Team reviews the course, Standards for Survival, which includes shelter deployment instruction every few years. The last review by the NWCG occurred in 1995. The Forest Service reviewed this course in 2000.

**Investigation Team and Report Process**

**Q12: Who were the members of the Accident Investigation Team, and what credentials do these members have that qualify them to be on the Team?**

The investigation team normally includes: a team leader, safety manager, chief investigator, technical specialist(s), and documentation specialist. Other team members may be added as needed. The investigation team for the Thirtymile Fire investigation constitutes a highly experienced level of public land management expertise in the fields of wildland fire and weather behavior, suppression tactics, safety, fire-crew skills, training and equipment. Five key members of the team--including the team leader--have more than 30 years of agency experience each; most have prior experience in serious accident investigations, several involving fire fatalities. The team's chief investigator, a private-sector non-agency member, has been involved in investigations or reviews of about 60 fatal accidents and has been engaged in human error analysis, safety management and safety improvement programs for over twenty years. (\*indicates team members with 30 years or more agency experience)

Team Members:

\*Jim Furnish -Team Leader, Deputy Chief, U.S. Forest Service, Washington D.C.

\*Kent Connaughton - Deputy Regional Forester, U.S. Forest Service, Pacific SW Region, Vallejo, CA.

Alan Chockie - Chief Investigator, Link Technologies, Seattle, WA.

Tony Kern - Human Factors, U.S. Forest Service, National Interagency Fire Center, Boise, ID.

\*George Jackson - Equipment Specialist, U.S. Forest Service, Technology & Development Center, Missoula, MT.

\*Rich Lasko - Fire Behavior, U.S. Forest Service, Northern Region, Missoula, MT.

\*Chuck Whitlock - Safety Manager, U.S. Forest Service, Technology & Development Center, Missoula, MT.

Ron DeHart - Public Affairs Officer, U.S. Forest Service, Mt. Baker-Snoqualmie National Forest, Mountlake Terrace, WA.

Dave Dash - Fire Operations, Alaska Fire Service, Ft. Wainwright, AK.

Jim Prange - Weather Specialist, National Weather Service, Seattle, WA.

**Q13: What are the two reports from the Accident Investigation Team?**

The AIT prepares a Factual Report and a Management Evaluation Report. The Factual Report identifies the facts involved in the accident and develops findings from the investigation. The Management Evaluation Report contains an executive summary listing the probable causal factors that are broken into: Influencing factors and Significant factors. Recommendations to prevent similar accidents are the final products of the Management Evaluation Report.

The chief investigator forwards the draft Factual Report within 45 days of the accident to the safety manager at the Forest Services' Washington Office. The safety manager establishes the Accident Review Board and supplies copies of the reports for each board member. The Board reviews the draft reports and accepts or rejects the reports for adequacy and accepts, or modifies recommendations contained in the management evaluation report.

The Board has the task of preparing the Accident Prevention Action Plan that is based on the recommendations approved by the Board. The final Factual and Management Evaluation Reports, and the Action Plan are submitted to the approving official, the Chief of the U.S. Forest Service, for approval.

**Q14: How do we get copies of the two reports and the recommendations that will follow?**

The Factual Report and Management Evaluation Report are posted on the Forest Service web at [www.fs.fed.us](http://www.fs.fed.us). The reports are also available to the media on CD; these are contained in press kits distributed at the press conference held in Yakima, WA, announcing the completion and availability of the Reports. Included in the reports are the Findings, Causal Factors, and Recommended Changes.

**Q15: What is the status of the Action Plan?**

The Action Plan has been submitted to the Chief of the US Forest Service for approval.

## **Accident Investigation Team Report Findings**

### **Q16: What were the first resources on the fire?**

An initial attack crew consisting of one wildland fire engine with three crewmembers arrived at the point of origin of the fire a few minutes after 11 pm, July 9.

### **Q17: Who was in charge of fire?**

The ultimate responsibility for management of the Okanogan-Wenatchee National Forest including fire management resides with the Forest Supervisor.

### **Q18: Who was the Incident Commander on the Thirtymile Fire?**

Due to the level of fire activity, number and type of resources, and complexity of the fire and fire behavior the Incident Commander changed hands three times. The command roles on the Thirtymile Fire were unclear and confusing to those in command of the incident, to the rest of the crew, and to others associated with the fire. The Incident Commander at the time of deployment was the Northwest Regular #6 Crew Boss.

### **Q19: Who is ultimately responsible for the fatalities?**

The responsibility lies with those who did not follow the established safety procedures and use the Incident Command System appropriately.

### **Q20: Are any personnel actions taking place as a result of this investigation?**

We don't know at this time. The Accident Investigation Team is not a faultfinding entity.

### **Q21: What are the significant factors that led to the fatalities?**

The most basic factor causing the four fatalities was inhalation of superheated air as a fast moving wildland fire burned over the 14 firefighters and two civilians. The fatalities and several injuries all occurred during deployment of fire shelters. However, four people died while attempting to gain protection. There had been considerable length of time, approximately 30 minutes, to improve the likelihood of survival during the deployment for all 16 entrapped individuals. Little was done until the very last moments.

The entrapment of the fourteen firefighters occurred because of a failure to recognize a rapidly deteriorating fire situation, placement of firefighters in a vulnerable position, limited communication, inability of leaders to control and command the operations, and finally, and most critically, failure to adhere to safety procedures and standard firefighting orders.

The entrapment of two civilians occurred because of a failure to properly close a potentially hazardous area and failure to successfully evacuate the canyon upriver from the fire. Had the 14 fire fighters not become entrapped, the two civilians likely would have perished without access to fire shelters as the fire moved swiftly through the upper canyon. There were no safety zones in the upper canyon due to the intensity of the fire.

The entrapments also were caused by failure throughout the day to successfully transition from initial to extended attack.

Fatigue of nearly everyone involved on the incident from initial attack to deployment likely contributed significantly to failures in leadership, command, control, proper fire assessment and size-up, development of strategies and tactics, communication, and the use of discretionary time.

There are also a number of organizational stresses, which may have added to problems in leadership, command, and communication.

The effectiveness of using water on this fire was lessened because of an inability to fully utilize available pumps. There was a delay in getting a helicopter to the fire because of the pilot's work/rest requirements. There was slowness in delivery to the fire, and confusion and/or lack of clear understanding about processes to deal with endangered species considerations on helicopter dipping in the Chewuch River.

The strategies and decisions made on the Thirtymile Fire from initial attack to shelter deployment did not appropriately reflect the extreme fire conditions that existed, nor did they appropriately consider the diversity and complexity of fuel types in the canyon floor. Similarly, the overall alignment of the road and canyon floor with prevailing winds, and the lack of adequate safety zones influenced the final outcomes.

Finally, the incident command system was not appropriately used because the Incident Commander held other concurrent duties on the fire.

**Q22: What was the cause of the deaths?**

The coroner's report states that all four deaths were caused by asphyxia due to inhalation of superheated products of combustion.

**Q23: Describe the sites where the firefighters deployed their shelters.**

Fire shelters were deployed in two locations: on the road and on the rock slope above the road. (The rock slope is sometimes referred to as a scree slope or talus slope; both apply to an accumulation of loose stones or rocky debris lying on a slope.) The deployment sites on the road were flat, clear of vegetation and significantly lower than the rock slope.

The sites on the rock slope consisted of a jumble of six-inch to six-foot diameter rocks, about 96 feet west of the road and 25 vertical feet above it, on a 25% slope. There was woody debris accumulated in crevices between the rocks.

**Q24: Why did some firefighters die and some survive?**

Fire shelters have a proven track record. They have already saved about 250 lives and prevented an equal number of serious burn injuries. However, there are cases where conditions are too severe for the shelter to withstand according to its specifications. For example, the rock slope where some of the shelters in the Thirtymile Fire were deployed made survival difficult because of the higher lethal temperatures and greater exposure to superheated gas, the presence of burnable fuels around and under the chosen deployment sites, and the difficulty deploying on an uneven rocky surface.

**Q25: What was the proximity of survivors to those that perished?**

Six firefighters deployed shelters in a rock slope approximately 96 feet upslope from the road where eight firefighters and two civilians deployed shelters.

The four firefighters who perished remained in their shelters on the rocky slope. Two crewmembers left their shelters in the rocks to a safer location at some point when the firestorm abated to non-lethal levels.

**Q26: How steep was the slope where the firefighters perished?**

The deployment site was on a 25% rock slope, about 25 vertical feet and 96 feet west of the road.

**Q27: Was the crew in communication with each other and with the crew boss during deployment?**

On the road, crewmembers talked, reassured each other, and prayed while in shelters. The Incident Commander attempted to calm all crewmembers and gave instructions to the crewmember that had the two civilians in her shelter. The Incident Commander maintained continuous communication with Air Attack during the deployment.

**Q28: Were the firefighters who deployed on the rocks in contact with the firefighters on the road before and during shelter deployment.**

Prior to the deployment, the Incident Commander on the road was in communication with the firefighters on the rocks. However, during deployment, the noise level made communication impossible between firefighters on the rocks and those on the road. It is unclear if all six of the firefighters on the rocks were in communication with each other during deployment.

**Q29: Were any rules, regulations or safety standards compromised, which ones and how?**

There 10 Standard Fire Orders were developed in 1957 by a task force studying ways to prevent firefighter injuries and fatalities. Shortly after the Standard Fire Orders were incorporated into firefighter training, 18 Watch Out Situations were developed. These 18 situations are more specific and cautionary than the Standard Fire Orders and described situations that expand the 10 points of the Fire Orders. If firefighters follow the 10 Standard Fire Orders and are alerted to the 18 Watch Out Situations, much of the risk of firefighting can be reduced.

The AIT found that all 10 standard fire orders were violated or disregarded at some time during the course of the incident and that ten of the 18 “Watchouts” were present or disregarded at some time during the course of the incident —identified by an asterisk.

10 Standard Fire Orders	18 Watchout Situations
1. Fight Fire Aggressively but provide for safety first	1. Fire not scouted or sized up
2. Initiate all action based on current and	2. In country not seen in daylight



expected fire behavior	
3. Recognize current weather conditions and obtain forecasts	*3. Safety zones and escape routes not identified
4. Ensure that instructions are given and understood	*4. Unfamiliar weather and local factors influencing fire behavior
5. Obtain current information on fire status	*5. Uninformed on strategy, tactics and hazards
6. Remain in communication with crewmembers, supervisor, and adjoining forces.	*6. Instructions and assignments not clear
7. Determine safety zones and escape routes	7. No communication link between crewmembers and supervisors
8. Establish lookouts in potentially hazardous situations	*8. Constructing line without safe anchor point
9. Retain control at all times	9. Building line downhill with fire below
10. Stay alert, keep calm, think and act decisively	*10. Attempting frontal assault on fire
	*11. Unburned fuel between you and the fire
	*12. Cannot see the main fire, not in contact with anyone who can
	13. On a hillside where rolling material can ignite fuel below
	14. Weather gets hotter and drier
	15. Wind increases, and/or changes direction
	*16. Getting frequent spot fires across the line
	*17. Terrain or fuels make escape to safety zones difficult
	18. Feel like taking a nap near fireline

**Q30: Did weather play a factor?**

Yes, weather was a factor. The area was enduring a lengthy drought and the moisture levels in large fuels were very low. The Energy Release Component, a measure of potential fire intensity, was near historic high levels for this time of year. Temperatures on July 10<sup>th</sup> reached into the high 90's, and the humidity 8% on the canyon floor. Although there was no dramatic shift in weather that would have created high winds, such as a cold front, up-canyon breezes were present to aggravate burning conditions. Fire conditions were potentially extreme.

**Q31: Was there a spot weather forecast for the Thirtymile Fire?**

No. A spot weather forecast was not requested for the Thirtymile Fire. The only spot weather forecast was from the previous evening for the Libby South Fire (50 miles south), which was used to brief NWR#6 crew.

The National Weather Service issued twice daily fire weather forecasts on July 10. The Okanogan Dispatch received these forecasts but did not transmit the afternoon forecast to the Methow Valley district or the Thirtymile Fire.

**Q32: What was the condition of forest fuels in the area at the time of the Thirtymile Fire?**

The fuel moisture content of dead woody fuels was at historic lows for the day of the event. There were ladder fuels abundant at the point of origin, on the east slope of the canyon, and throughout the canyon floor. The wetter sites in the riparian area where the fire started consisted of spruce and alder with some aspen nearby. The drier sites where the fire made its large run on July 10 consisted of fir, lodgepole, and ponderosa pine.

There was an abundance of large diameter woody debris on the canyon floor. Much of the debris was in the advanced stages of decomposition and highly susceptible to ignition by firebrands. Spruce boughs extended within a few feet of the top of the surface fuels increasing the likelihood of crowning and torching. The hilly slopes containing Douglas fir and lodgepole were densely stocked with branches extending within a few feet of the top of surface fuels.

**Q33: Why wasn't the road closed, how did civilians get into the area?**

Around 10:00 am, July 10, the Forest Fire Management Officer requested the Chewuch River road be closed. For reasons that are unclear, district personnel did not scout the road for civilian traffic nor close the road until later that day. Around 2:30 p.m., the duty officer requested that Engine #704, during its dispatch to the fire, put up a "road closed" sign approximately one mile from the end of the pavement on the Chewuch road. The sign was put up at 3:17 p.m. Because the road remained open a good part of the day the two civilians were able to enter the area through the "open" road.

**Q34: Why were there three cars in the area? Who did they belong to?**

There were three vehicles parked at a trailhead that accessed the Pasayten Wilderness. The vehicles belonged to individuals who were hiking in the wilderness a long distance from the area of the Thirtymile Fire.

**Q35: If the helicopter had arrived when requested, would water drops from the helicopter have prevented the blow-up?**

There is no way to determine whether an earlier arrival of the helicopter would have prevented the blow-up. The optimal delivery of the helicopter to the Thirtymile Fire could have resulted in, at most, a 5-hour improvement in its arrival. At best guess, a helicopter could deliver approximately 40-60 loads in a 5-hour period. At 75 gallons per load, this would yield a total of 3000-4500 gallons during the period in question.

Ground water operations were also ineffective because of the inability to keep the pumps running continuously. Two Mark III pumps were available, which could have delivered 15-90 gallons of water per minute, depending on pressure (running at full throttle, a large hose will deliver a large quantity of water, and a small hose or nozzle will deliver a smaller quantity of water, but with higher pressure and an ability to spray the water a

greater distance). Thus, with two pumps running for 5 hours at medium pressure (150 psi), the total delivery is approximately 37,000 gallons.

**Q36: Do federal firefighting policies risk the safety of firefighters?**

No. The first Standard Fire Order is to “fight fires aggressively but provide for safety first.” Federal firefighting policies place a heavy emphasis on safety first and foremost in all cases. Firefighting is a risky and dangerous business and federal firefighting guidelines and training requirements address the need for suppression tactics and plans to ensure firefighter safety first.

Ensuring firefighters are properly trained and that policies, order, and procedures are followed is the only way to eliminate or minimize these hazards and risks. Lessons have been learned such as requiring annual shelter deployment training, minimal qualifications in training and experience to be in supervisory positions, encouraging firefighters to question tactics and strategy and the right to refuse assignments. These lessons have improved available technology to fire organizations, availability of protective equipment, and expanded our knowledge of fire science. The lessons have culminated in the last decade with the development and revision of Federal Wildland Fire Policy and an increased emphasis on firefighter and public safety. Unfortunately, increasingly dangerous fire conditions and the complexity of dealing with human factors such as leadership, experience, accountability, complacency, and fatigue offer troubling challenges.

**Q37: Has there been any guidance to the field as a result of this accident.**

Yes, incident management teams were immediately notified to increase and/or re-emphasize our commitment to safety during all incident assignments. Employees at all levels were notified personally, in writing, or via email on safety continuing to be the top priority during work and fire assignments. Web sites and publication locations were distributed to employees and advisories were circulated such as the one that follows:

**Advisory**

***FIRE SHELTER: EMPHASIS ON REVIEW AND TRAINING***

It is extremely important to understand the limitations of the current fire shelter. Firefighters must be aware of appropriate requirements for a deployment site and avoiding direct flame contact with any part of the shelter. Requirements for a deployment site include bare mineral soil and no adjacent flammable materials.

Firefighters following safe firefighting practices should never experience the reality of having to use their fire shelters. Safe firefighting practices incorporate a risk assessment including the 10 and 18 and LCES. The fire shelter should be the very LAST line of defense.

Recent testing using new technology and equipment has allowed us to learn more about the shelter's limitations. We now know that direct flame contact will cause the release of flammable glue vapors, which may ignite within the shelter. Firefighters should review Your Fire Shelter (2001 edition) NFES 1570 for information on deployment sites.

Fire shelters have a proven track record. They have already saved about 250 lives and prevented an equal number of serious burn injuries. We still believe that it is safer to be inside a fire shelter than outside during a burn-over event. For more information contact your Regional Fire & Aviation Management staff.

## **Policy**

### **Q38: Was the Endangered Species Act (ESA) a factor in the fatalities?**

No. The ESA was not found to a significant causal factor to the fatalities at the Thirtymile Fire.

### **Q39: What is Resource Natural Area (RNA) and what is the relationship to the suppression efforts on the Thirtymile Fire?**

Research Natural Areas (RNA) provide long-term protection of the research and educational values of special places and the ecosystem elements that they represent. "RNAs will be managed in compliance with all relevant laws, regulations and Forest Service Manual direction regarding RNAs and in accordance with the management direction identified in their respective Forest Plans."

Although the area burned was part of the Chewuch River Research Natural Area on the Okanogan National Forest, suppression efforts were not restricted or prevented in any way due to the special designation of this area.

### **Q40: Given the fact that you (USFS) are receiving billions of dollars through the National Fire Plan, why are you continuing to allow the forest health conditions to get to such a point that catastrophic fires unnecessarily threaten lives and property?**

The US Forest Service and other federal land management agencies are addressing the unhealthy forest conditions that exist including a build up of combustible materials and invasive species. Under the National Fire Plan, hazardous fuel reductions provide for management treatments (i.e., prescribed fire and mechanical thinning), to address dense forest vegetation resulting from decades of wildland fire suppression and fire exclusion on forest and rangelands. Hazardous fuel reduction activities under the National Fire Plan focus on wildland urban interface areas to reduce risks to people and property, as well as forested areas at high risk to catastrophic fire.

Reducing hazardous fuels on public land is not new. Federal land managing agencies have been conducting this type of work for almost four decades. What's different is that because of the severity of last year's wildland fires, the Forest Service and the Department of the Interior are intensifying efforts by starting more projects and working more closely with Federal agencies, tribal and state governments, and rural areas. Also,

Congress has provided more funding for hazardous fuel treatments than in the past, allowing the agencies to accomplish more work.

The National Fire Plan also provides an additional \$12 million for the USDA Forest Service to prevent and control invasive species, which will improve forest health conditions. This includes technical assistance for management and control of native and non-native forest insects and diseases, including non-native weeds, evaluation of forest and tree health after fires, suppression of bark beetles that increase in forest stands weakened by fire, and protection of wildland urban interface communities.

**Q41: Were any of the firefighters hired under the National Fire Plan?**

Yes. National Fire Plan suppression funds brought the agency back to the 1994 Most Efficient Level (MEL) staffing. The Okanogan-Wenatchee National Forest was able to hire an additional 76 firefighters this season due *in part* to National Fire Plan funding.

**General Information**

**Q42: What is the relationship to the OSHA investigation?**

The Forest Service Investigation comes in two parts, a factual report and a management review report. In addition to the Forest Service reports, the Occupational Safety and Health Administration (OSHA) is conducting their own investigation, pursuant to Section 19 of the Occupational Safety and Health Act of 1970 and Executive Order 12196 of February 1980. The OSHA investigation is conducted independently in order to identify and recommend the correction of any systemic safety and health program deficiencies that may have contributed to the tragedy.

**Q43: Does the Forest have a current Fire Management Plan?**

The Okanogan National Forest has a Fire Management Action Plan that was last updated in 1997. The Wenatchee National Forest has a Fire Management Action Plan that was last updated in 1996. When the two forests merged in 2000, both the Fire Management Action Plans were reviewed.

**Q44 How often are these plans updated?**

Forest Fire Management Plans should be reviewed annually and updated as necessary.

**Q45: Is the Forest Service going to recognize Rebecca Welch for her bravery?**

Yes. The Forest is submitting a request on behalf of Rebecca for the Secretary's Honor Award for her bravery and selflessness in saving the lives of the two civilians during the incident.

**Q46: Are surviving crewmembers back fighting fires?**

Some of the surviving crewmembers resumed firefighting duties after the Thirtymile Fire, and some were assigned to non-firefighting duties.

**Q47: What compensation has the Forest Service allowed for the firefighters who perished?**

The families of the firefighters who died are compensated under the Public Safety Officer's Benefits Act.

*Public Safety Officers' Benefit Act (through the Dept of Justice)* – Employee is eligible in the event of permanent disability or death while in the performance of duties in law enforcement, firefighter, or a member of a public rescue squad or ambulance crew.

- Benefit is based on \$100,000 and adjusted on Consumer Price Index after June 1, 1988.
- If surviving children and spouse, one-half to children in equal shares and one-half to spouse,
- If no surviving children, benefit to go to surviving spouse
- If no surviving spouse, benefit to go to children in equal shares
- In no spouse or children, benefit to parent/parents in equal shares

**Q48: What is mop-up?**

According to the National Wildfire Coordinating Group Handbook 3 (Fireline Handbook, Jan 1998), mop-up is the term applied to extinguishing or removing burning material near control lines, and felling snags and trenching logs to prevent rolling after an area has burned. Mop-up starts as soon as line construction and burnout are completed. Mop-up operations are prioritized by attacking the most threatening situations (i.e., possible escapes or hottest areas, first).

Principles of mop-up:

- Mop-up entire area, if practical, on small fires
- Mop-up on large fires far enough inside the fireline to be sure that no fire can blow out, spot, or burning materials can roll over the fire line under the anticipated worst possible conditions.
- Fell only those snags, which could result in spotting or fire spread across the line.
- Search for smoldering spot fires.
- Consider potential for problems from snags, smoldering or decayed logs, and fuel concentrations outside the control line.
- Search for a dig out burning fuels to reduce heat and danger of spotting.
- Trench below, block, or turn heavy logs, stumps or material so they cannot roll.
- Feel with the back of your hands for possible smoldering spots close to the line (use care – go slow).
- Use water in conjunction with hand tools. In dry mop-up, stir and mix hot embers with dirt.
- Use water sparingly, but enough to do the job. Match the amount of water to the job.
- When using water to mop up deep-burning fuels such as peat, duff, or needles, scrape or stir fuels while applying water.
- Adding wetting agents or foam to water will greatly increase effectiveness of water, especially in deep burning fuels.

**Q49: Was the Thirtymile Fire considered to be in mop-up stage?**

No. When the NWR #6 crew arrived on scene, the Thirtymile Fire had not been declared contained or controlled thereby meeting the definition of extended attack rather than mop-up.

**Q50: Is there a criminal investigation concerning the cause of the fire? Have charges been filed? What is the status of the investigation? Is there a reward?**

The cause of the fire was determined to be an abandoned picnic cooking fire. There is an on-going investigation and charges may be filed when the individual or individuals have been identified. Investigators are specifically interested in hearing from anyone who was in the area, or who knows anything about anyone who may have been on the Chewuch River Road between July 7<sup>th</sup>-9<sup>th</sup> around Andrews Creek and the Thirtymile Trailhead. The Forest Service is offering up to \$50,000 for information leading to the arrest and conviction of the person or persons responsible for the abandoned picnic cooking fire.

**Q51: What is the Haines Index?**

Donald Haines devised the Haines Index in the late 1980's as a national index for large fire growth based on the stability and moisture content of the lower atmosphere. The actual Haines Index is derived from twice daily upper air soundings taken over the continental United States and Canada. Indices range from a 2, which indicates moist and stable air, to a 6, indicating dry and unstable air.

Haines Indices generated from the Spokane morning sounding of July 10<sup>th</sup> indicated a mid-level value of 6 and a high level value of a 3 and 4. A mid-level Index of 6 is very common for the month of July and August in eastern Washington.

**Q52: What are the similarities between the recommendations from the Thirtymile and South Canyon Fires?**

Fire training recommendations were contained in the South Canyon Report that led the way to revised hands-on training for shelter deployment that is required for all fire line personnel on an annual basis. This is the same training used today and it emphasizes the recognition of survivable deployment sites and safety zones. The Accident Investigation Team for the Thirtymile Fire has stated that fire shelter instruction needs to be of the highest quality to stress the importance of this critical piece of safety equipment. In addition to changes in training over the past several years, the Thirtymile Accident Investigation Team recommends that fireline-qualified personnel must perform the five shelter training scenarios outlined in current training materials. They recommend this be completed at least once before a fire assignment. Fire training is examined and updated based upon information gathered following any shelter deployment.

The Thirtymile Fire Accident Investigation Team and the South Canyon Review Team recognized that weather forecasts (both spot and general) do not directly assess fire behavior potential and provide only a part of the information necessary to develop and implement safe fire management strategies and tactics. South Canyon reviewers recommended two-a-day weather forecasts that are used today and recommended the use

of meteorologists and fire behavior specialists on large incidents (<300 acres). Additionally, the South Canyon Review Team stressed that it is incumbent upon firefighters to take responsibility for requesting fire weather and behavior information to insure firefighter preparedness on every new assignment. Recommendations related to weather and fire behavior are in both reports because of their critical importance; changes in personnel assignments in the fire community, firefighters working in a wider variety of terrain, vegetation, and differing weather conditions. Wildland firefighting agencies continually review previous recommendations so that appropriate changes can be made concerning firefighting strategies and training as more reliable and accessible information is available. This is especially critical for spot weather forecasts and localized fire behavior information.

The Thirtymile Accident Investigation Team has recommended that the Fireline Handbook and all other related documents be revised to change the classifications for Incidents (Type 1,2,3,4). They recommend the terms initial attack and extended attack be reserved as descriptors of stages of an incident, not the command level required. They also recommend that Incident Commanders assigned to a Type 3 incident not have collateral duties. This differs from the recommendation from South Canyon that recommended that Incident Commanders Type 3 and 4 be required to gather fire weather information during initial and extended attack. However, South Canyon recommendations did result in a change to weather information that is now contained in the current Fireline Handbook for initial and extended attack incidents.