The Board of Review
for the
Waterfall Wildfire Entrapment

Convened August 13, 2004
Carson City, Nevada

Chair --John Berry, Forest Supervisor, Eldorado National Forest

Pete Anderson, State Forester, Nevada Division of Forestry

Lou Buckley, Chief, Carson City Fire Department

Ed Monnig, Deputy Forest Supervisor, Humboldt-Toiyabe National Forest

Steve Holdsambeck, Wildland Fire Safety Manager, USFS Region 4

Interagency Board of Review
Waterfall Fire Entrapment
Of July 14, 2004

Board of Review Members

Chair – John Berry, Forest Supervisor, Eldorado National Forest
Pete Anderson, State Forester, Nevada Division of Forestry
Lou Buckley, Chief, Carson City Fire Department
Ed Monnig, Deputy Forest Supervisor, Humboldt-Toiyabe National Forest
Steve Holdsambeck, Wildland Fire Safety Manager, USFS Region 4

The Board of Review was convened on August 13, 2004 for the purposes of:

- Hear a report from the Waterfall Fire Burnover Accident Investigation Team – Joe Freeland and Jim Payne.
- Discuss the finding of the Accident Investigation and determine if the findings were acceptable to the Board, and if the findings adequately address the incident.
- Accept, modify or reject the draft recommendations of the accident review team.
- Determine any follow up actions needed and document them.

Review of the Investigation Report

It is the consensus of the Board of Review to accept the findings of the Waterfall Fire Burn-Over Report, as amended.

The Board of Review determined the findings, as amended, adequately address the facts and findings.

It was the conclusion of the Board of Review this was an entrapment and the title of the report should state that this was an entrapment.

The Board of Review summarized the key findings into **three causal factors**.

Leadership Failures:

- Lack of predetermined trigger points for initiating withdrawal of resources from Division B and staging, including communications, and understanding; resulting in untimely disengagement and egress.
- No staging area manager was assigned resulting in no single point of contact for communications and unmanaged congestion.
- Management of "Staging Area 2" was not assumed by Division Group Supervisor B. "Staging Area 2" was essentially a drop point and parking lot for Division B resources and the structure protection group.
- Command and General Staff, as well as Operations overhead in Division B, and the structure protection group recognized the traffic problems but did not implement effective action.

Communications:

- The lack of an assigned staging area manager resulted in the absence of a point of contact for communications to and from "Staging Area 2".
- Radio frequencies were overloaded prior to and during the burnover.
- Personnel at "Staging Area 2" were not advised of the approaching fire front which left them vulnerable to the burnover.
- Retreating firefighters from the blow up on the southeast end of the fire arrived at the "Staging Area 2" just moments before the fire front, leaving little time to personally communicate the danger and to implement evacuations from the "staging area".

Congestion on Kings Canyon Road and at "Staging Area 2":

- Unauthorized and non-essential people and vehicles were allowed to drive up the Kings Canyon Road to "Staging Area 2", and in some cases further into the fire area.
- The Kings Canyon Road provided the primary access into the fire area, but was narrow and had limited parking room at the trailhead which became "Staging Area 2".
- In some cases vehicles were oriented in the wrong direction, others without operators and/or without keys in the ignition, making rapid egress difficult.

Follow-up Actions Needed:

1. Develop a **common interagency operating plan** among the Sierra Front fire protection agencies addressing how multi-jurisdictional initial attack and extended attack fires will be managed. This operating plan should address such issues as:

Protection Objectives
Organization, Roles and Responsibilities
Communications Plan
Access Management
Media Management
Area Closures
Joint Field Exercises
Transitions from Type 3 to Type 2 IMT's
Aviation Management
Fire Investigations
Control of Un-assigned Resources & Un-assigned Agency Officials
Use and Management of Staging Areas
Type 3 Incident Management Assignments

Responsibility: The Nevada Division of Forestry, Humboldt-Toiyabe National Forest and Carson City Fire Department will develop this plan and disseminate information to all cooperators (Nevada Fire Board, Sierra Front Wildfire Cooperators, Lake Tahoe Fire Chief's Association, and Agency Administrators).

Due Date: April 1, 2005

2. Conduct **follow-up(s) to the after action review** that was done following the Waterfall Incident. Additional topics have surfaced since the initial review was completed. Key players were present for the first review, but information was not disseminated to the lower levels of the fire organizations. Share those results with local cooperators and use them as lessons learned.

Responsibility: Nevada Division of Forestry will take the lead in organizing a follow-up after action review.

Due Date: October 30, 2004

3. Although the investigation team found no unqualified individuals in the Type 3 command structure, agency administrators need to **review all red carded personnel** and their qualifications. The accident investigation team is to forward information on individuals who were not wearing Personal Protection Equipment (PPE) to the individual's agency administrator for appropriate feedback/action. The accident investigation team is to forward information on individuals responsible for "non-compliance of policy" items in the accident investigation report to the appropriate agency administrator for follow-up action.

Responsibility: Accident investigation team feedback to agency administrators on PPE and "non-compliance of policy" individuals.

Due Date: October 30, 2004

Responsibility: Agency administrators review currency, qualifications, and training; and execute appropriate certification or desertification. Agency administrators execute appropriate follow-up for policy non-compliance with respect to PPE.

Due Date: December 25, 2004.

4. Conduct a **review of historical data** of previous Sierra Front burnover and/or entrapment related incidents. Address issues and follow-up actions that have not been brought to closure. At a minimum the following incidents should be reviewed: Autumn Hills, Senica, and American Flats.

Responsibility: Agency Administrators

Due Date: October 30, 2004

5. There is a continuing need for NWCG to address the organization and **management of complex, rapidly developing incidents**. Current Type 3 individuals and Type 3 organizations cannot be expected to safely and effectively manage incidents such as the Waterfall Incident through even a 24 hour period. Develop recommendations for the management of complex; extended attack, wildland fires prior to the arrival of a Type 1 or Type 2 incident management team.

Responsibility: Great Basin Coordinating Group recommendation to NWCG.

Due Date: January 1, 2005

6. There is a need for immediate short term agreement among the Sierra Wildfire Cooperators to use **single incident commanders in Type 5-3 incidents** and not attempt Unified Command, except at Type 1 and 2 levels of ICS management. Develop and distribute direction among Sierra Front Wildland Fire Cooperators to utilize a single incident commander and assign agency liaison officers as jurisdictional concerns dictate.

Responsibility: Sierra Wildfire Cooperators

Due Date: August 31, 2004

WATERFALL INCIDENT
BOARD OF REVIEW NOTES

August 13, 2004

Attendees:
Pete Anderson, State Forester, Nevada Division of Forestry
Lou Buckley, Chief, Carson City Fire Dept.
Steve Holdsambeck, Wildland Fire Safety Manager, USFS Region 4
Jim Payne, USDA-Forest Service, Retired
Joe Freeland, Fire Management Officer, Elko Field Office, Bureau of Land Management
Ed Monnig, Deputy Forest Supervisor, Humboldt-Toiyabe National Forest
Allison Good, Safety, USFS Chief's Office
Bob Ashworth, Fire Management, Nevada Division of Forestry
Mike Dondero, Chief, Fire and Aviation, Humboldt-Toiyabe National Forest
Randy Dregger, Safety Officer, USFS Region 4
Mike Dudley, Director, Fire and Aviation, USFS Region 4
John Berry, Forest Supervisor, Eldorado National Forest
Lee Ann Evans, Fire Business Mgmt Specialist, Humboldt-Toiyabe National Forest

Purpose of the Board of Review:
- Hear report of the accident review board and their findings.
- Discuss findings.
- Accept, modify, or reject adequacy of review.
- Accept, modify, or reject recommendations of the board.
- Determine if follow up actions by the group need to be taken.
- Prepare accident prevention plan.

The board made the decision to include Ed Monnig on the board for this review.

Joe: Presentation of the accident review boards report.

- The Sierra Front Wildfire Cooperators, made the decision to investigate the burnover that took place on the Waterfall Incident, July 14, 2004. There were 21 firefighters and 18 vehicles that were involved. (Of 36 vehicles at or near Staging Area 2, 18 were able to escape the burnover, 11 vehicles were not able to escape and sustained little or no damage, and 7 vehicles were destroyed or severely damaged.)
- The investigative team was a diverse cadre with Inter-agency representation and expertise.
- Was this an accident, an incident with potential or an entrapment? There were several burns but no fatalities.
- Team had to look at participating agency policies and guidelines to determine if they had been followed during initial and extended attack on the incident.
- Were there clear lines of communication?

- Team conducted seventy plus interviews.
- At the request from the Intermountain Regional Office, all names were withheld from the report.
- Arson Investigators provided video and still footage as well as Eng-3 out of Carson City. Local Channel 4 and Channel 8 also provided invaluable footage that aided in the investigation. (An edited version of the clip was viewed by the group today to provide a clear picture of the events that led to the burnover.)
- Radio logs were provided by Minden dispatch.

Jim: Development of findings.

- Brainstorming within the team to come up with possible answers.
- Initially the team had 53 findings in 10 categories.

  - **Environmental and Fire Behavior:** Very high indices, ERC's above 97%, weather data was properly relayed, potential was there with Haines Index of 5. The blow-up on the north end of the fire caused the south end of the fire to spot and spread northeast and to the burnover at Staging Area 2.

  - **Multi-Jurisdictional Incident Management**: It was assumed that NDF was the jurisdictional agency at approximately 0300. Unified command was established at IA with an IC from both NDF and CCFD at 0600 Forest Service was added to Unified Command. Each of the three IC's discussed with their Agency Administrators what there plan was for management objectives on the incident. Command and Operations personnel realized the threat of significant downhill fire spread. Trigger points for disengagement and evacuation were not identified.

  - **Communications:** A communication plan was in place with five radio frequencies which included command, two tactical frequencies, air to ground, and air to air. However, frequencies were overloaded. With this radio traffic congestion, numerous overhead personnel started using their home unit frequencies and cell phones for communication. This resulted in critical information not being relayed to personnel on the fire who had a "need to know" resulting in more confusion on fire status and tactics.

  - **Firefighter and Public Safety:** All resources were briefed prior to assignment but briefings were inconsistent. Lookouts were posted. All resources interviewed had identified escape routes and safety zones. Many assigned and un-assigned personnel were in the fire area without PPE. Was Staging Area 2 assigned by command or did it just develop? It was formally designated and was originally called the "upper staging area". Uncontrolled access into Staging Area 2 resulted in a multitude of people and vehicles in a very congested area. Many of these people were there in an unofficial capacity from their respective fire protection agencies, adding to the congestion on Kings Canyon Road. This compromised the safety of tactical firefighting personnel and their ability to escape the entrapment in Staging Area 2. From the time the fire spotted to the fire actually

burning through Staging Area 2 was approximately 10 minutes. Command and Operations recognized the potential for a bottleneck in Staging Area 2 but no one took decisive action to remedy the situation. Check in procedures lacked accountability for who was on the fire or who was allowed into the area. The SOF3 temporarily pulled two hand crews off the line in DIV A due to increased fire activity, working up canyon from point of origin, unanchored line and a downhill spot fire. As spotting occurred across the road, one of the three IC's (FS), the Operations Section Chief and the TFLD (one engine) were on site watching it develop. Evacuations of homes and private parties were accomplished using proper procedures and law enforcement personnel. At Staging Area 2 notification to withdraw was done face to face as people were trying to escape the area. Shortly after 1100 two crew members from the Slide Mountain hand crew sustained potentially serious injuries from a rock slide on DIV B near Staging Area 2. A medivac was discussed by IC's but never implemented. NAS Fallon could not do it. This response involved reassigning paramedics and firefighters from an engine task force and the structure protection group; a trainee DIVS, the ordering of a heavy rescue squad and advanced life support units from CCFD. This rescue was based from Staging Area 2 adding more personnel, vehicles and confusion. The extractions took 5-6 hrs with one victim being extracted immediately prior to the burnover at Staging Area 2. The other victim was moved into black above Staging Area 2 before the burnover and was extracted about 1500. This medical situation diverted the attention of command away from the fire and the emerging situation. Bucket operations were also diverted to cooling the perimeter near the rescue operations limiting aerial support for other areas on the fire. The medical rescue contributed significantly to the complexity of the incident and to the vehicle congestion at Staging Area 2.

- **Transitions:** At approximately 0600 the structure of command and general staff changed with a replacement IC from NDF and an additional IC from the HTF. This resulted in 3 IC's working in Unified Command representing NDF, HTF, and CCFD. The lead IC was not clearly identified. The IC's also assumed other pertinent roles on the incident. At 0800 a complexity analysis was completed and a Type 2 team ordered. **The review board wants to identify a critical point:** that point being; even though there were three different philosophies of fire management functioning within the incident, from three represented agencies, command was functioning well until the time of the medical emergency. At 1200 incoming Type 2 team members started arriving for the in briefing by one of the Unified IC's. One Unified IC (CCFD) was not aware of the briefing. The other Unified IC (FS) departed for the fireline as OSC (T) on the Type 2 IMT, assuming their IMT had taken command of the fire at 1200. The original delegation of authority and WFSA were developed prior to the 7/14/04 1200 briefing and rejected by the Type 2 IC at approximately 1300. The second delegation of authority and WFSA were signed by the Forest Supervisor, Humboldt-Toiyabe National Forest and the State Forester, Nevada Division of Forestry at 2030 on 7/14/04 for a 7/15/04 0600 transition. The Type 2 Team began assuming operational responsibilities for the fire as early as 1600 on 7/14/04. No one clearly knows when the Type 2 Team took the fire.

- **Roles and Responsibilities:** Confusion resulted from numerous changes in personnel filling positions at the command, general staff and division supervisor levels. These changes were not communicated effectively leaving personnel not knowing who the IC was, or who was in charge at the OCS and DIV levels. There were Agency Administrators representing NDF, CCFD and the Forest Service. Responsibility for Staging Area 2 and traffic control on Kings Canyon road was not clear to the DIVS. There were some unassigned "free-lancing" fire management supervisors that entered the fire area and started directing resources without the approval or even the knowledge of Operations. This added to the confusion among the firefighters of who was actually in charge.

- **Operational and Tactical Decision Making:** The IC's and the Ops Chief made a conscious decision to allow only those who had tactical assignments on the fire into Staging Area 2 to reduce congestion. Although this was recognized no one took action to implement restricting access into the area. A Staging Area Manager was not assigned. There was no traffic control established on the Kings Canyon Road leading into Staging Area 2. Direct attack from hand crews was ineffective without aerial support.

- **Entrapment:** Staging Area 2 personnel were not aware that the fire was spotting/spreading across the road. Vehicles parked alongside the road were left there as people migrated towards the fire. Twenty-one fire fighters and 18 vehicles were entrapped. (Of 36 vehicles at or near Staging Area 2, 18 were able to escape the burnover, 11 vehicles were not able to escape and sustained little or no damage, and 7 vehicles were destroyed or severely damaged.) This matches the definition of NWCG for an entrapment. Two people received first and second degree burns; one a media person and an engine operator. There was one fire shelter deployment inside a vehicle. Safety zones were identified as well as escape routes by the Type 3 organization. Employees interviewed were all surprised by the volume of personnel coming off the fire using the same escape route. Coming down were the Hot Shot crew, the Slide Mtn. Crew, engines and numerous overhead all trying to escape the same way. A Central Lyon Co. engine caught fire while stopping to let the Channel 4 news vehicle turn around and exit, this blocked the road for escape; the engine was abandoned and left without an operator or keys in the ignition. Numerous other vehicles were parked uphill and various fire personnel were not in required PPE. The road was wide enough for two vehicles but two separate vehicles were blocking the escape route. The burnover left three vehicles totally destroyed. Four other vehicles received moderate damage and numerous other vehicles received minor to moderate heat related damage. This was a Type 3 incident most of Command and General Staff personnel on the fire were qualified as Type 2. There was no evidence that indicated there were unqualified people on the incident functioning in positions they were assigned to. Neither the Unified IC's nor the Agency Administrator received word of the burnover and entrapment in a timely fashion. Upon notification the OSC initiated an order for Type 1 IMT following consultation and approval of the FS Agency Administrator.

- ❖ **Management:** The IC's, AA and fire managers lacked a common understanding of transition from the Type 3 to Type 2 IMT's regarding the differences and normal timelines between in-briefing, transition, and the official take-over of the incident. There is no common interagency AOP of how Type 3 fires will be managed on multi-jurisdictional lands. Tactical operations are not covered with the current AOP, it mostly addresses cost apportionment. Assigned Type 3 FIO did not understand Nevada State laws regarding media access to the fireline. Media ceased to be managed after the notification of the medical emergency. Areas around the fire were not effectively closed to public prior to the entrapment.

- ❖ **Policy:** The team felt that during the time of IA and extended attack through the burnover at Staging Area 2, most fire suppression policies and procedures of the responsible agencies were followed. They have provided a table in the Factual Report that addresses the inconsistencies or areas of non-compliance.

Group Discussion on Above Findings:

- **Environmental/Fire Behavior**: **Steve** – Haines prediction was a "5" and that is what OSC based his tactical decisions on, it was actually a "4".
  Bob – Environmental conditions of the fire should not have been a surprise. Command was prepared for the chain of events to occur at 1700 not 1300.

- **Multi-Jurisdictional Incident Management**: Pete wanted to clarify that "Trigger Points" had been identified for the ordering of suppression resources, but not evacuation of suppression resources. The team finding within operations was that there were not defined "trigger points". IC (CCFD) was an IC in the Unified Command organization. He realized he was there to represent CCFD as structure fire protection but he acted more in a liaison role.

- **Communications:** Who assigned the frequencies? (Command) Team findings were that the frequencies were well communicated. Interviews proved that no one was confused on what those frequencies were. The confusion stemmed from what frequencies fire personnel should be using, command or tactical. The question was asked if narrow/wide banding was an issue. The team stated, "No". The narrow banding issues were identified early in the incident and avoided through state channel assignments.

- **Fire Fighting/Public Safety:** How is it that no one challenged the individuals that were on the fire line without proper authorization and without proper PPE? The team reported that some of the unassigned personnel were there without PPE, but most of the violators were "freelancers". Branch Commander for Structures (CCFD) did direct people to get into their PPE. Were these failures for proper PPE agency specific? Team said their findings implied that the failures for proper PPE were across the board and fairly widespread. There were reports of 5-6 Chiefs and Battalion Chiefs up King Canyon Road just having a look around adding to the confusion and congestion.

Did the quality of the briefings improve as the incident went on? NO!

Could Air Ops have made a difference in stopping the rate of spread on the south end of the fire had they not had to concentrate their efforts on the medical? Doubtful! An IC (NDF) called a "heads-up" to local cooperators looking for possible additional resource assistance. This may have caused a sequence of events that added to more cooperators wanting to "check-out" the incident increasing the number of people and vehicles in an already congested area.

- **Transitions:** Who does the Sierra Front Type 2 IMT work for? It was explained that it is a wide interagency agreement for funding and cooperation. They ultimately work for the agency administrator of the hosting agency. Why did they not take the fire at 1200? The fire activity was increasing and it was not a good time to assume the responsibility of the incident.

- **Role and Responsibilities:** Who took the lead in directing personnel unofficially? Who directed the engine from Lyon Co. to attack the small spot fire while Ops was trying to get everyone off the line? The team found it was an NDF employee. Ops did not assign anyone to be the STGM of Staging Area 2.

- **Entrapment:** Why does report say that command was not notified in a timely manner? There was not a report back to the administrators that the burn over happened. When was the formal notification? Team reported, "during the transition meeting at approximately 1330".

- **Management:** There was no clear understanding of what role the Type 2 team had prior to assuming command of the fire. It was not clearly defined or understood on the Sierra Front Team. Prior to take over, that team could have helped the T3 team implement. There needed to be concise direction on who had the fire. The T3 organization was fully engaged and then some. In the teams' opinion, "the T2 organization missed some opportunities to help the T3 team be successful until the T1 team took over". This leads to the teams recommendations on how "Waterfall" type fires will be managed on the Sierra Front. Dudley commented, "Sierra Front team is unique, a rapid response team for immediate support. Concern that we have added a complexity with unified command, this was a Type 3. This could be a national issue, with evacuations and medivacs. These Type 3 scenarios happen weekly along the Sierra Front for that matter in all wildland/urban interface areas. Are you going to have automatic unified command or the strongest leadership take control? This needs to be documented and implemented."

  Dispatch knew who IC's were, but the information was never relayed to the line.