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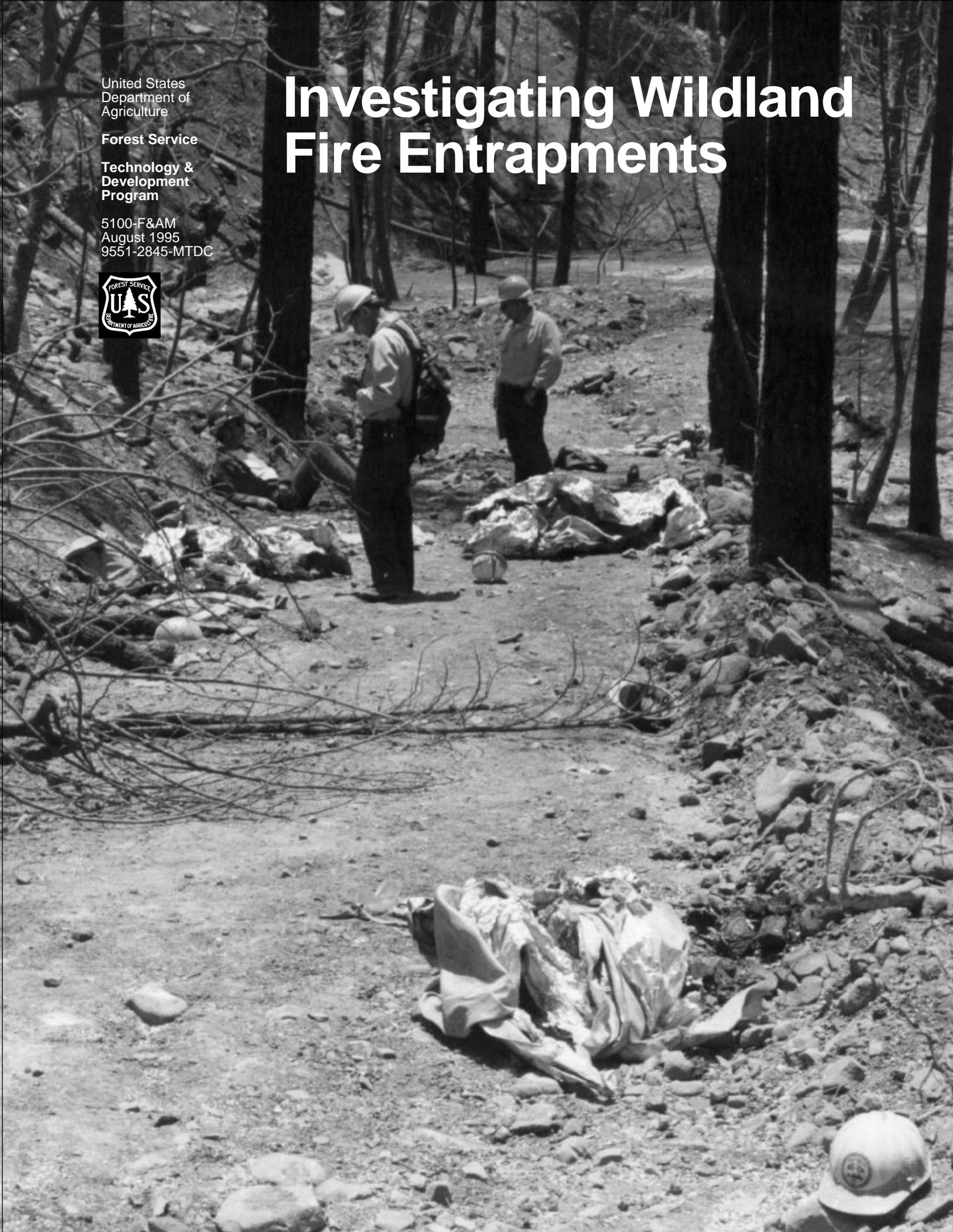
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Technology &
Development
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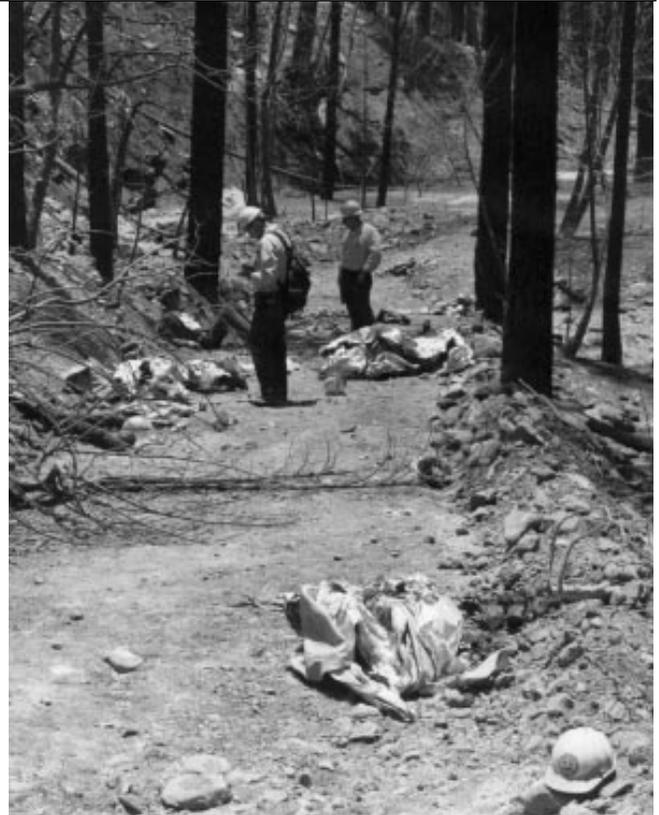
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Investigating Wildland Fire Entrapments



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Introduction

Wildland firefighters operate daily in a high-risk environment. The interaction of fuel, weather, and terrain often combine to create sometimes seemingly unpredictable fire behavior conditions that threaten to entrap or overrun firefighters. Although tens of thousands of wildland firefighters are engaged in suppression activities every year, instances of entrapments and burnovers are extremely rare. A large measure of this safety in firefighting can be directly attributed to the standardized training program and fire qualifications processes developed by the National Wildfire Coordinating Group (NWCG) and used by the federal, state, and local agencies involved in wildland fire suppression. In addition, the strong emphasis for on-the-ground firefighters to use the **18 Situations that Shout "Watch Out,"** the **10 Standard Fire Orders,** and **L.C.E.S. (Lookouts, Communications, Escape Routes, Safety Zones)** have combined to keep safety in the forefront of fire operations, and to reduce entrapments, injuries, and fatalities.

In spite of all the training and qualification processes, there are infrequent occasions when entrapments and burnovers do occur. In 1993 and 1994, wildland fire entrapments occurred in New Mexico, California, Arizona, Colorado, Idaho, Montana, Oregon, Georgia, Wisconsin, Oklahoma, Nevada, and Florida. These entrapments involved 155 firefighters. Twenty died and 10 were injured on these incidents.

NWCG defines an entrapment as *"a situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes and safety zones are absent, inadequate, or have been compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include "near misses."*



Fire shelters and other equipment should be left in place until fire investigators are on the scene.

Entrapment Investigation

Wildland firefighters are members of a relatively small community and operate under a concept of total interagency mobilization that moves firefighters across the country as easily as rural departments move across a county line. Because of this mobility, it is imperative that information about specific entrapments and the "Lessons Learned" from these situations be disseminated to all firefighters in a thorough and timely manner. For that reason, most wildland fire agencies who experience a burnover or fatality conduct a fire entrapment investigation to review the circumstances of the incident. Such a review can provide important insights and recommendations to improve wildland fire safety. NWCG has prepared a brief paper that describes the recommended process for initiating a wildland fire entrapment investigation (Appendix).

The Team

Because of the infrequent occurrence of wildland fire entrapments, and with the large number of jurisdictional authorities across the country, there are no pre-existing entrapment teams. Rather, as soon as an entrapment occurs, the agency having jurisdiction moves to establish an investigation team for the specific incident. (Note: The South Canyon Fire Interagency Management Review Team report recommends that a standing interagency interdisciplinary team be formed to conduct fire accident investigations.)



Fire investigators inspect a fire entrapment scene.

Typically, a chief investigator is assigned from the "Lead Agency" on whose land the entrapment occurred or whose firefighters were involved. In cases where two jurisdictions are involved, co-chief investigators may be named. Other individuals normally assigned to an entrapment investigation team may include:

- A fire operations specialist, normally at the Operations Section Chief level;
- A qualified fire safety officer;
- A fire behavior analyst, with experience in the incident fuel type;
- A fire weather meteorologist from the National Oceanic and Atmospheric Administration (NOAA) Fire Weather Service;
- Fire equipment specialists from MTDC who develop the personal protective equipment (PPE), including the fire shelter used on wildland fires.

Other skills that have proved highly valuable on entrapment investigation teams include a technical photographer and a fire information officer. Additional individuals should be added only as necessary to simplify the communications and interactions both within and outside the team.



Quality photographic support is critical to the investigation and subsequent actions.

Early Notifications

As soon as an entrapment and/or fatality is verified, the local unit agency dispatcher should initiate certain contacts necessary to meet legal and logistical requirements:

- Agency law enforcement personnel should be requested to assist in securing the site.
- If fatalities occur (even on most federal lands) the county sheriff must be notified to begin the efforts with the county coroner/medical examiner.

Other important notifications that should occur, based upon the local agency's requirements, include the National Interagency Coordination Center (NICC) at Boise, Idaho; higher level agency headquarters (such as the Washington Office for the USDA Forest Service); federal or state Occupational Safety and Health Administration (OSHA); and other individuals or organizations specified in an agency incident response plan. NWCG has developed a "*Wildland Fire Entrapment Form*" (NFES 0860) specifically to report information on entrapments within 24 hours of their occurrence to the NICC at Boise, Idaho (Appendix).

On-Scene Activities

Information gathered at the site of an entrapment is often critical in reconstructing the events that occurred and for identifying lessons learned so that future similar events can be avoided.

If fatalities occur on an entrapment, the individual(s) should not be moved without specific permission of the sheriff/coroner. Of course, injured personnel should receive first-aid and transportation to medical facilities as soon as possible. Everything else on the scene (tools, vehicles, personal equipment, and fire shelters) should be left where they are until cleared for removal by the chief investigator. Law enforcement personnel should be used to secure the site from outside disturbance and from unauthorized visits by the media.

MTDC investigators have developed a "*Fire Entrapment First Response Form*" that will be faxed to the unit experiencing an entrapment. It is a checklist of crucial steps that need to be taken prior to the arrival of the investigation team (Appendix).



The county sheriff's office will be involved in the on-the-scene investigation.

Once the investigation team arrives on the site (usually within 12 hours), they set out to accomplish a variety of tasks:

- The entire scene should be completely photographed before any items are moved or disturbed. Specific areas requiring photographic documentation include overviews of the entrapment scene from the air. Helicopter shots are especially valuable, since they allow the photographer to obtain photos showing the scene in perspective to other features such as roads, creeks, improvements like powerlines, and homes. Aerial photos often show other critical factors such as fuel types and burn patterns that may have contributed to the entrapment. Care should be taken when using helicopters, so that prop wash does not disturb the site and blow the fire shelters about. Other important photographic support includes general area photos of the scene from the ground and large-format close-ups of damage to the personal protective equipment and other firefighting equipment. (Note: Laying a new yellow **Nomex**® shirt and green **Nomex**® trousers where an individual was burned over helps a photograph better show conditions as they were found.) A detailed site diagram, showing specific locations of individuals, equipment, roads, structures, and other important features should be made. A relatively small entrapment scene can be mapped using a compass and pacing method from a known control point such as a road intersection. On larger scale entrapments, such as Arizona's 1990 Dude Fire, which occurred over more than a 3/8-mile area, Global Positioning System (GPS) may be a useful tool to document where individuals and

equipment were located. A detailed site diagram is an essential part of the final investigation report (facing page).



Aerial views of burned over areas offer a different perspective.

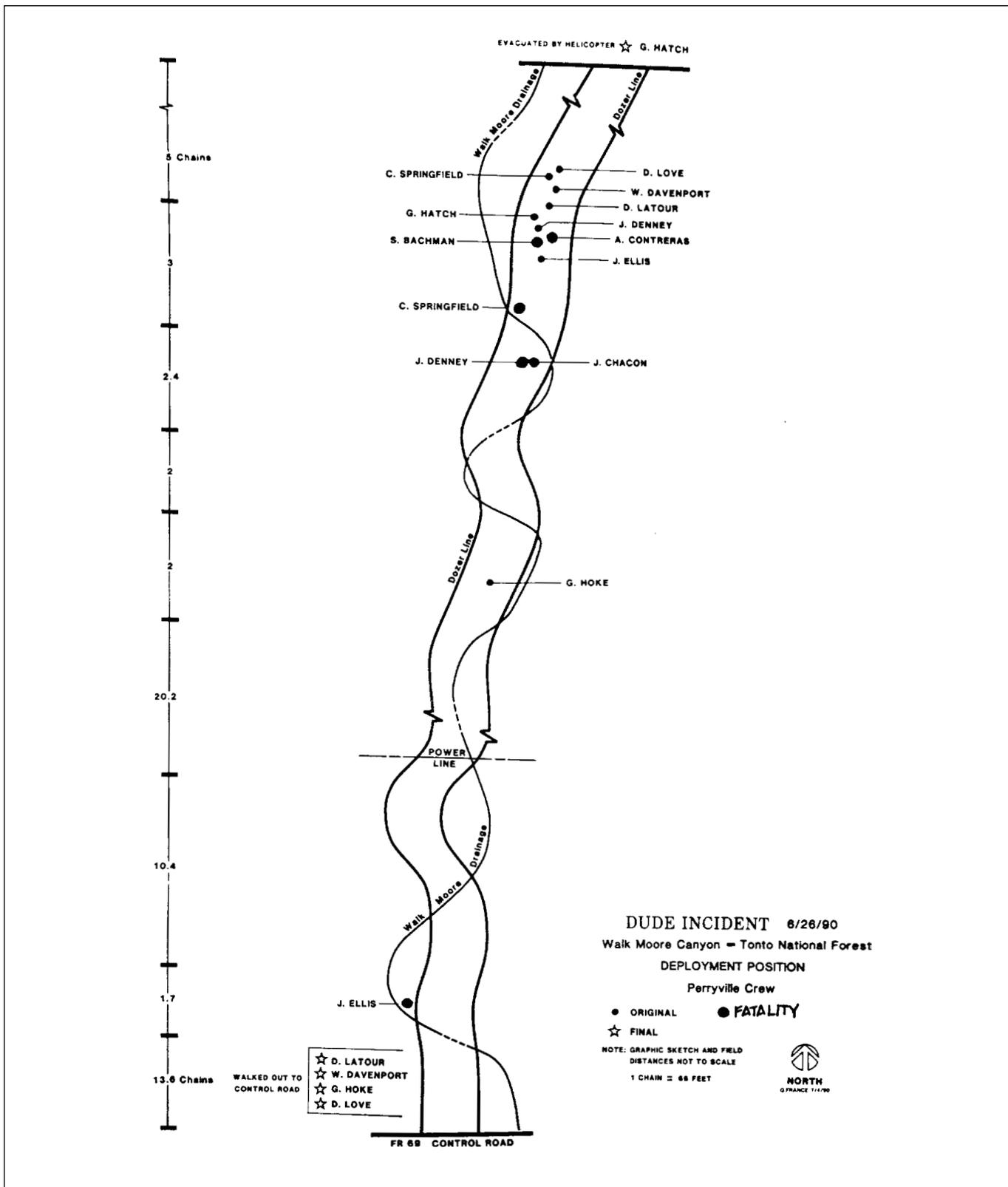


Helicopter support may be needed to transport the investigation team and photographer.

- After the scene is photographed with all PPE and other equipment in place, investigators should observe the position of all items to help reconstruct the events that took place. After the visual review is complete, individual items of PPE and other equipment should be collected, tagged to indicate which person used them, and removed to the investigation team headquarters. Because many of the items (such as deployed fire shelters and burned PPE) may be items of curiosity to other firefighters, the media, relatives of the injured/burned firefighters, or the general public, they should be protected in the same manner as evidence from crime scenes.
- Natural features at entrapment scenes can provide valuable information. Slope, aspect, drainage, fuel type, fuel loading, heat-set on grass and needles, and evidence of winds can all aid the investigators in determining events that led to the entrapment.



Placing fire clothing where entrapments occurred can help the photo documentation.



Dude Fire Incident deployment location diagram.



The Global Positioning System (GPS) can be used to document locations on an entrapment.



Investigators should document the condition and location of personal protective equipment as it is found at the scene.

Analysis of Personal Protective Equipment

When the PPE and fire equipment is removed from the fire scene, there are a number of factors that should be reviewed and analyzed. The PPE should be inspected for compliance with the agency's policies on mandatory and optional equipment for wildfires. It should also be inspected to determine the manufacturer, and if it was constructed according to accepted standards.

Compliance or non-compliance with NFPA 1977 is another point of analysis since the adoption of wildland PPE standards in August 1993. The NFPA compliance label is a good indicator of this standard.

Clothing that has been subjected to radiant heat or direct flames should be compared with industry examples to show temperature ranges in the entrapment. Comparing the afterburn conditions of equipment with the design standard for the individual items can often help determine the survivability of an entrapment. The fire shelter, for example, will normally withstand radiant heat of 260 to 316°C (500 to 600°F) before the adhesive bonding the glass cloth to the aluminum foil begins delaminating. **Nomex**[®], the aramid fiber used in the fire trousers, will discolor from green, based on the temperature ranges it is subjected to during the entrapment/burnover. Wildland fire gloves, made of full-grained, chrome-tanned cowhide, will also show signs of high temperatures when compared to a standard glove.



Close inspection of the fire shelter provides clues of temperature ranges during the entrapment.



Inspection of fire line equipment for heat damage.



Firefighter's glove shows high temperature effects.

Critical Incident Stress Debriefing

Being involved in a fire entrapment/burnover incident is one of the most traumatic events that a wildland firefighter can experience. This is especially true if other firefighters were killed or injured. It is essential that surviving firefighters are given a critical incident stress debriefing (CISD) as soon as possible after the event occurs. An effective CISD will help firefighters and others involved with the incident to better relate the events to interviewers and help the investigators to more clearly understand all aspects of the entrapment.



Entrapment survivors should be given "critical incident stress debriefing."

Witness Statements

Interviews with all personnel directly and indirectly involved with an entrapment should begin as soon as possible after the CISD. Besides the actual firefighters involved in an entrapment, other important sources of information may include incident management personnel, dispatchers, aircraft pilots and any other individuals who may have observed the fire area, weather, or fire behavior prior to or during the entrapment. Team members may wish to develop a series of standard questions specific to the incident, so that everyone begins from a common base. Several team members with different areas of expertise should interview an individual alone, in a non-threatening environment away from the fire scene. Besides addressing the pre-determined questions, opportunities should occur for the development of new, previously unknown points of information.

There are several effective methods for documenting the individual interviews. Entire interviews can be tape-recorded for later verbatim transcriptions; the interviewer can prepare a record of the interview; or, the person being interviewed can prepare an individual written statement of events. No matter which method is chosen, the document must be signed or initialed by both the person being interviewed and by those conducting the interview before leaving the area. If the person will not sign or initial the statement, it should be noted by the interviewer. Groups of participants **should not** be interviewed together. Each individual needs the opportunity to tell their story without the influences or perceptions that others may impart.

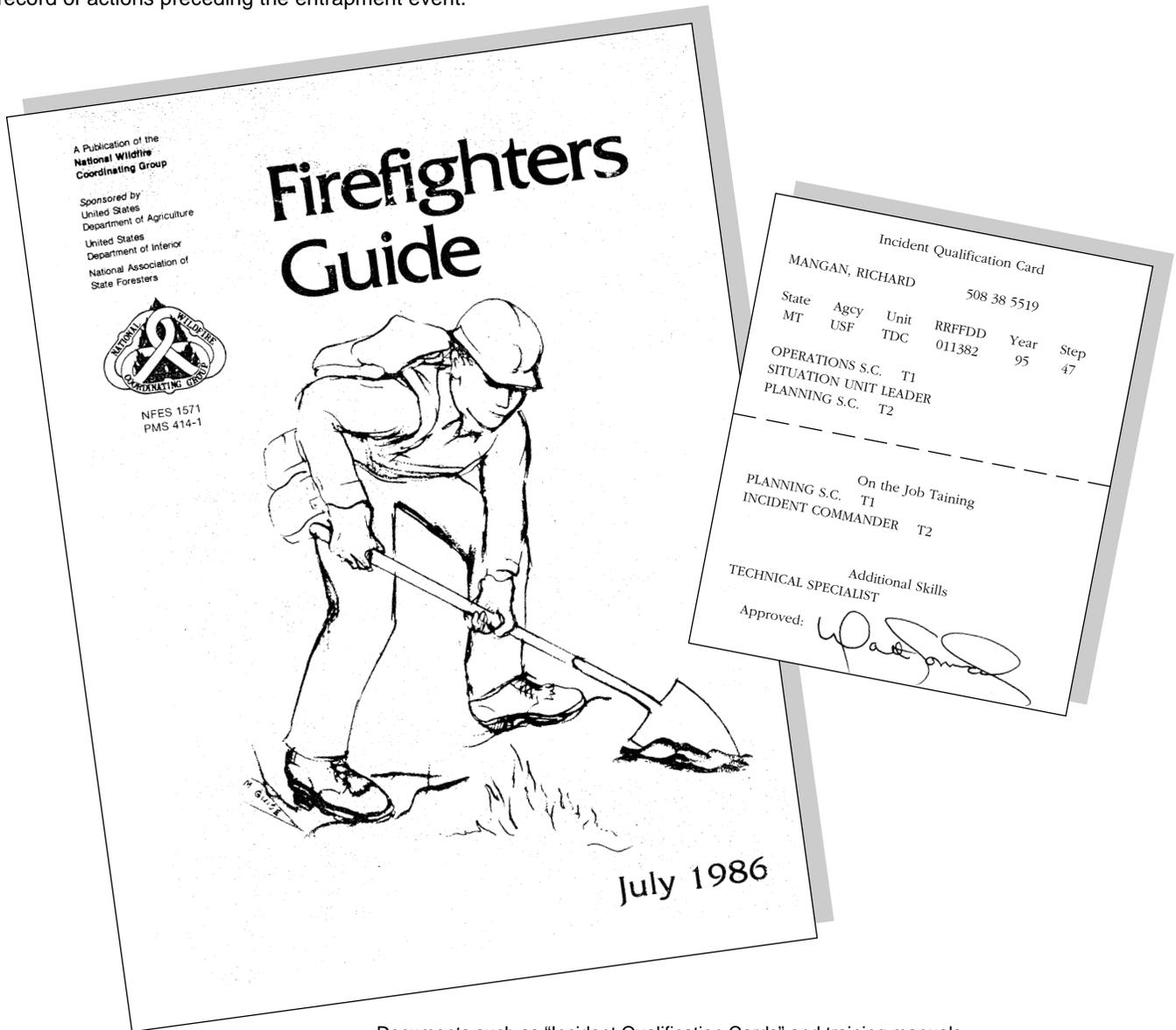


Inspection of fire damaged equipment and tools shows the range of heat exposure.

Documentation – (The Paper Trail)

While the interviews are being conducted and equipment from the site is being analyzed, other team members should begin gathering written records pertinent to the entrapment incident: radio logs, aircraft flight manifests, training and qualifications forms, resource orders, weather forecasts, incident action plans, standard operating procedures (SOP's), agency policies, and area maps. These documents can help develop a chronology of events, confirm that existing standards were or were not met, and show if critical information, such as red flag weather warnings, were available to both firefighters and fire managers. This information can show both general and specific fire management direction for the fire area, fuel and weather conditions, and can also provide a record of actions preceding the entrapment event.

Sources of this information include the dispatch offices of all agencies having individuals or equipment assigned to an incident; offices of the National Weather Service; law enforcement agencies such as the county sheriff, state police, and highway patrol; flight records from helibases, air tanker facilities, contract logs and the Federal Aviation Administration; medical reports from local emergency rooms, regional burn and trauma centers, coroners and medical examiners; fire training and qualifications records of involved personnel from local and area offices, as well as from computer systems. These qualifications should be compared with accepted standards (such as ICS 310-1) for the agencies involved.



Documents such as "Incident Qualification Cards" and training manuals are important sources of information for the entrapment team.

Medical Reports

The medical examiner's report of any fatalities is an important component of an investigation. It is important that the cause of death be specified (i.e., smoke inhalation, burns, etc.), that the carboxyhemoglobin level of the blood be specified, and that tests for drugs and other substances be completed. This is necessary to meet the requirements of the Public Safety Officers Benefits Act (Public Law 94-430), which pays a large sum of money to the survivors of any firefighter who dies in the line of duty. The medical examiner's full report should be handled with sensitivity, and does not need to be included in its entirety in the investigation report. A detailed autopsy protocol for firefighter line-of-duty deaths is available from the U.S. Fire Administration.

COUNTY OF LOS ANGELES

12 **AUTOPSY REPORT** No. 89-99382

I performed an autopsy on the body of **DOE, JOHN**
the DEPARTMENT OF CORONER

at Los Angeles, California on APRIL 3, 1989 @ 1500 HOURS
(Date) (Time)

From the anatomic findings and pertinent history I ascribe the death to:

(a) BODY BURNS, PARTIAL CHARRING AND SMOKE AND GASTRIC FLUID
DUE TO OR AS A CONSEQUENCE OF

(b) _____
DUE TO OR AS A CONSEQUENCE OF

(c) _____
OTHER SIGNIFICANT CONDITIONS

Anatomical Summary:

- I. Body burns, partial charring and smoke and gastric aspiration - (Trapped fighting hillside fire).
- A. Large areas of skin burned with superficial.
- B. Charred, deep splitting of skin in back of
- C. Smoke and gastric fluid aspiration.
- D. Diffuse congestion of viscera.

FA-156 / May 1995

**FIREFIGHTER
AUTOPSY
PROTOCOL**


Federal Emergency Management Agency

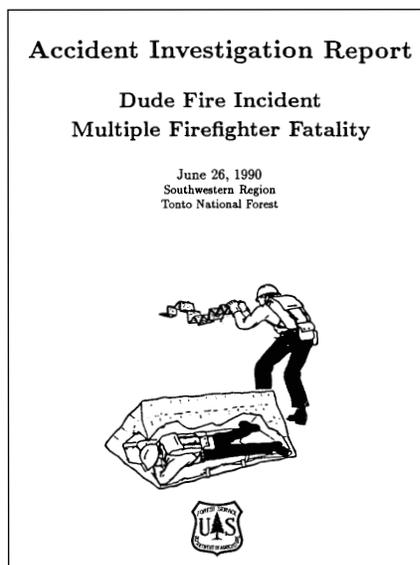
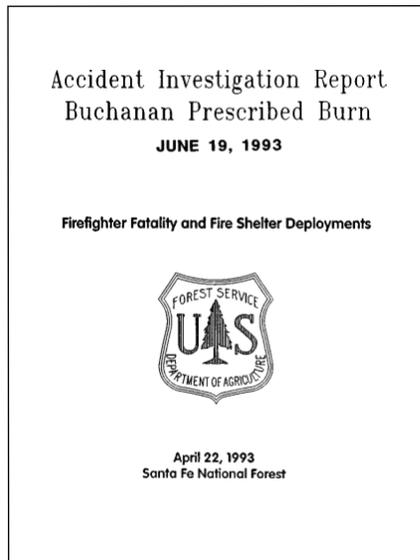

United States Fire Administration

Key elements in an investigation.

The Entrapment Report

The entrapment report itself can follow a variety of different formats, but several components are often included to make the document both readable and useful to fire managers:

- **The Narrative** - Gives the reviewer an overall look in an easily read format at the events that occurred. The narrative includes dates, times, locations, and a list of individuals necessary to give the reader a thorough picture of the incident. It is not intended to serve as a minute-by-minute chronology of the events.
- **Chronology** - Detailed documentation of the times, places, and people shown in a time line from the start of the incident. For multiple day fires, the early stages need only be shown to reflect major events such as the time of ignition, initial attack times, and resources assigned. As the chronology gets closer to the specific incident, documentation of the critical items and events become more detailed.
- **Findings** - These are specific facts or events that are related to the entrapment incident, and that can be documented by witness statements, radio logs, weather observations, training records, or other documentation that has been gathered in the early stages of the investigation. The "Findings" should all be listed, without regard to their significance in relation to the direct or contributory causes of the entrapment. That significance will be established in the next phase, when the findings will be evaluated against the criteria of "did not contribute," "influenced," or "significantly contributed" to the entrapment. Potential facts that cannot be substantiated should not be included as findings.



Accident Investigation Reports of the Dude and Buchanan fire fatalities.

Causal Factors

After the "Findings" section of the report has been completed, they are then evaluated to determine which ones led to the entrapment being reviewed.

A process recommended in the NWCG Entrapment Review Guidelines gives three criteria:

- Did not contribute
- Influenced
- Significantly contributed

Those "Findings" evaluated as "did not contribute" can be dropped from further consideration and investigation. Those rated as "influenced" and "significantly contributed" should be thoroughly reviewed to identify the "causal factors" that led to the entrapments or fatalities.

Causal factors can be classified as "direct," meaning those that are found to have resulted in the entrapment/burnover. Direct causes may include such items as failure to follow the **10 Standard Fire Orders**, extreme fire weather or fire behavior, lack of adequate communications equipment, or inadequate briefings on expected fire weather and behavior. Causal factors may also be defined as "contributory." These are factors that may not have directly led to an entrapment/burnover, but rather "set the stage" for the event to occur. Examples include the failure to follow policies and procedures; conflicting priorities for resources; and delay in taking appropriate action.

The determination of causal factors is perhaps the most critical portion of a wildland fire entrapment investigation report. It synthesizes all the available information, and identifies those few factors that led – either directly or indirectly – to the incident under review. The causal factors will lead the investigators to those recommendations which will ideally prevent the future occurrence of a similar event.

Conclusion

Wildland firefighters becoming entrapped, injured, or killed by a wildfire have a traumatic effect on survivors, fire managers, agency administrators, and all others who are involved in wildland firefighting throughout the United States and the world.

A professionally conducted fire investigation offers the opportunity to evaluate our policies, procedures, equipment, and actions and to clearly identify areas needing improvement. Wildland fire suppression by its very nature is a high-risk environment. A thorough review and report of entrapments can help reduce that risk to firefighters.



Fire-damaged personal protective clothing.



Appendix



NATIONAL WILDFIRE COORDINATING GROUP

Memorandum

July 27, 1993

To: NWCG Members

From: Chair, NWCG

Subject: Fire Entrapment Investigation and Review Guidelines

At the January, 1993 meeting, NWCG approved the Fire Entrapment Investigation and Review Guidelines prepared by the Safety and Health Working Team, subject to some editorial changes. Those changes have been completed as attached. The intent of the Guidelines is to obtain standardized data to assist in identifying trends and determining preventative measures for the benefit of all. They are not intended to replace agency protocol or to compromise any agency prerogatives.

NWCG recommends that each member review existing direction regarding investigation procedures and subsequent sharing of information resulting from investigation of fire entrapments, then incorporate the guidelines below to the extent possible.

These Guidelines recommend:

- A standard interagency investigation process, procedures, and composition.
- Interagency participation on investigation teams.
- Identified channels to communicate findings and mitigation measures.

These guidelines recommend the establishment of Entrapment Investigation Teams. Because of the short time frames to organize such Teams, potential members should be predetermined by the various Geographic Coordination Groups and reflect interagency composition so far as practicable.

The guidelines also indicate that the Safety and Health Working Team will review each entrapment report and distribute a “sanitized” summary of applicable findings and recommendations to NWCG and the National Fire Protection Association within thirty days of receipt of the investigation report from the appropriate agency administrator, via the “SafetyGram”.

Portions of these guidelines, specifically the “Management and Command Responsibilities” and the “Entrapment Investigation Element Matrix”, will be added to Chapter 4 (Firefighter Safety) of the NWCG 410-1 “Fireline Handbooks” upon its next revision.

NWCG feels that these guidelines will be a viable and useful tool for all participating members.

A handwritten signature in black ink, appearing to read 'Elmer Hurd', written in a cursive style.

Elmer Hurd

Enc.

FIRE ENTRAPMENT INVESTIGATION AND REVIEW GUIDELINES

PROBLEM STATEMENT:

Since 1976, over 300 shelter deployments and 30 entrapment fatalities have been documented in wildfire suppression operations. In reviewing available injury and fatality investigation reports, it is clear that there are common circumstances that are causal factors throughout the entire wildland fire management community chain of command.

NWCG recognizes that some agencies do an outstanding job of investigating entrapments, implementing corrective recommendations, and distributing findings. However, in some cases, improvements could be made by implementing and following clear investigation criteria, using consistent entrapment review elements, and by wide distribution of findings and recommendations.

These key improvements would noticeably further the prevention of these tragedies and near-miss incidents; without correction of these deficiencies, fire behavior-related injuries and fatalities will continue to occur.

STATEMENT OF PURPOSE:

NWCG hereby recommends guidelines for investigation and review of fire entrapment situations. These guidelines are not intended to replace agency-specific investigation protocol.

The intended purpose for developing these guidelines is to provide standardized data to assist in identifying and analyzing trends. From those trend analyses, preventative recommendations may be made.

These investigation and review guidelines will:

- a. Outline investigation elements, and
- b. Clarify management and command responsibilities.

Through the NWCG Safety and Health Working Team, the review process will:

- c. Provide an effective distribution mechanism of findings, and
- d. Develop a framework for implementation of recommendations.

DEFINITIONS:

Agency Administrator: That lead employee having responsibility for management of land and/or resources on an organizational unit, and having accountability for overall results of management actions

Entrapment:

A situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes or safety zones are absent, inadequate, or have been compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include near misses.

ENTRAPMENT INVESTIGATION ELEMENTS:

The following elements most commonly contribute to entrapment situations. As a minimum, each of these elements should be addressed in an entrapment investigation and subsequent report, even if the investigation indicates that the element did not contribute to the entrapments. Exhibit I, “Entrapment Investigation Element Matrix”, may be utilized to expedite the process .

- I. FIRE BEHAVIOR
 - Fuels
 - Weather
 - Topography
 - Predicted vs. Observed

- II. ENVIRONMENTAL FACTORS
 - Smoke
 - Temperature
 - Visibility
 - Slope
 - Other

- III. INCIDENT MANAGEMENT
 - Incident Objectives
 - Strategy
 - Tactics
 - Safety Briefings/Major Concerns Addressed
 - Instructions Given

- IV. CONTROL MECHANISMS
 - Span of Control
 - Communications
 - Ongoing Evaluations
 - “10 Standard Fire Orders/18 Watchout Situations”

- V. INVOLVED PERSONNEL PROFILES
 - Training/Qualifications
 - Operational Period Length/Fatigue
 - Attitudes
 - Leadership
 - Experience Levels

- VI. EQUIPMENT
 - Availability Performance/Non-performance
 - Clothing and Equipment
 - Used for Intended Purpose?
 - Etc.

MANAGEMENT AND COMMAND RESPONSIBILITIES:

Incident Commander Responsibilities (in addition to those identified in ICS 410-1, “Fireline Handbook”):

Upon notification of an entrapment the Incident Commander should consider:

1. Removing involved personnel from the fireline, ensuring appropriate medical attention as necessary. When hospitalization or fatalities occur, relevant facilities and organizations should be advised to preserve all involved personnel's protective clothing and equipment.
2. Ensuring that the entrapment or deployment scene is secured and that all pertinent evidentiary items are secured (in place if possible), particularly fire shelters and personal protective equipment as required by the Occupational Safety and Health Act.
3. Immediately notifying the Agency Administrator and providing details on the incident status summary (ICS-209).
4. Initiating a preliminary investigation of the entrapment or deployment to determine the facts of the entrapment, insofar as possible. The initial investigation will be completed within 24 hours of the entrapment.
5. Relieving involved supervisors from fireline duty until the preliminary investigation has been completed.
6. Ensuring that personnel and supervisors are readily available for interviews by the Entrapment Investigation Team (EIT, below defined). "Available" means present at the incident base or nearby R&R center
7. As soon as possible, providing the results of the Incident Commander's preliminary investigation to the Entrapment Investigation Team. Ensure preparation of a roster of individuals involved in the entrapment. The roster must minimally contain their names, employing agency, genders, ages, addresses, incident position titles, and appropriate employee identification numbers.

Agency Administrator Responsibilities:

Upon notification of an entrapment or deployment, the Agency Administrator should assure that the following activities take place within 24 hours of notification:

1. Convene an Entrapment Investigation Team (EIT) to investigate the entrapment. It is recommended that the EIT be interagency in nature and should include personnel with the following skill areas:
 - a. Incident Commander or Operations Section Chief (Type I).
 - b. Fire behavior analysis, qualified in the specific fuel type.
 - c. Safety officer, with investigative expertise.
 - d. Wildfire operations, with expertise at the peer level of the person(s) directly involved.
 - e. Agency representative of involved person(s).
 - f. Employee representation (union, peer at operations level).

- g. Fire weather meteorology.
 - h. Personal protective equipment specialist, from a lab such as the USDA-Forest Service's Missoula Technology and Development Center.
2. Instruct the EIT to arrive on scene within 24 hours.
 3. Advise the Incident Management Team of the EIT's time of arrival and team composition.
 4. As required by the Occupational Safety and Health Act of 1970, advise the nearest office of the Occupational Safety and Health Administration (federal or state as applicable) if the entrapment involves a fatality or the hospitalization of 5 or more personnel. Advise OSHA office that a formal investigation is being conducted by a designated Entrapment Investigation Team.
 5. Arrange for a critical incident stress debriefing team for the personnel involved in the entrapment.
 6. Notify the home unit agency administrator of all individuals involved in the entrapment/ deployment.
 7. Submit a copy of the EIT's final report to the NWCG Safety and Health Working Team within 60 days of receipt from the EIT.

Entrapment Investigation Team Responsibilities:

1. The EIT will conduct the investigation, identify causal factors and list findings for the entrapment situation. Recommendations for corrective actions should be included in the letter of transmittal.
2. The EIT will brief the Agency Administrator and the Incident Commander of their preliminary findings prior to leaving the incident.
3. Within 30 days of the EIT's dispatch, the EIT's final report and recommendations for corrective actions will be submitted to the Agency Administrator.

NWCG Safety and Health Working Team (SHWT) Responsibilities:

1. Within 30 days of receipt of each entrapment report, the SHWT will distribute a summary of the applicable findings to NWCG agencies and the National Fire Protection Association, per the NWCG Safety Gram". This summary will not include any incriminating agency references or information identified as sensitive by the agency.
2. The SHWT will periodically review all entrapment reports, determine trends, and incorporate findings to develop specific prevention recommendations for implementation by NWCG agencies.

ENTRAPMENT INVESTIGATION ELEMENT MATRIX

	<i>Did Not Contribute</i>	<i>*Influenced</i>	<i>*Significant Contribution</i>
I. FIRE BEHAVIOR			
Fuels			
Weather			
Topography			
Predicted vs. Observed			
II. ENVIRONMENTAL FACTORS			
Smoke			
Temperature			
Visibility			
Slope			
Other			
III. INCIDENT MANAGEMENT			
Incident Objectives			
Strategy			
Tactics			
Safety Briefings/Major Concerns Addressed			
Instructions Given			
IV. CONTROL MECHANISMS			
Span of Control			
Communications			
Ongoing Evaluations			
“10 Standard Fire Orders/18 Watch-out Situations”			
V. INVOLVED PERSONNEL PROFILES			
Training/Quals./Physical Fitness			
Operational Period Length/Fatigue			
Attitudes			
Leadership			
Experience Levels			
VI. EQUIPMENT			
Availability			
Performance/Non-Performance			
Clothing and Equipment			
Used for Intended Purpose?			

**Element items must be supported with written documentation.

NWCG

WILDLAND FIRE ENTRAPMENT/FATALITY INITIAL REPORT

Timely reporting of entrapments or fatalities is necessary for the rapid dissemination of accurate information to the fire management community. It will also allow fire safety and equipment specialists to quickly respond to these events as appropriate. This initial report does not replace agency reporting or investigative responsibilities, policies or procedures. Complete this report for fire-related entrapment and/or fatalities. Immediately notify the National Interagency Coordination Center (NICC) attn: Intelligence Section. Submit this written report to the address given below within 24 hours. Submit even if some data are missing.

NICC-National Interagency Fire Center
3905 Vista Avenue
Boise, Idaho 83705

Phone-(208) 389-2400
FAX-(208) 389-2414

NICC Intelligence Section
DG-A.INT: W02A
IAMS- FCNICCOR

I. General Information

- A. Fire name and location _____
B. Number of personnel involved _____
C. Number of injuries _____
D. Number of fatalities _____

II. Fire Related Information

- A. Fuel Model _____
B. Temperature _____ R.H. _____ Wind _____ (mph)
C. Topography _____ Slope _____ %
D. Fire size at time of incident/accident _____ Acres
E. Urban/wildland intermix Yes No
F. Cause of Fire Natural Incendiary Accidental Unknown

III. Entrapment

A situation where personnel are unexpectedly caught in a fire-behavior related, life threatening position where escape routes or safety zones are absent, inadequate or have been compromised. An entrapment may or may not include deployment of a fire shelter.

A. Entrapment information

- | | | |
|--|--|---|
| 1. Firefighter trapped | <input type="checkbox"/> with fire shelter | <input type="checkbox"/> without fire shelter |
| 2. Burns/smoke injuries incurred while in fire shelter | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Burns/smoke injuries incurred while escaping entrapment | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Burns/smoke injuries incurred while fighting fire | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Fire shelter performed satisfactorily | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Fire shelter was available, but not used | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

B. Personal Protective Equipment Used

- | | | | | | |
|-------------------------|------------------------------|-----------------------------|---------------------|------------------------------|-----------------------------|
| 1. Fire Shelter | <input type="checkbox"/> Yes | <input type="checkbox"/> No | 5. Protective Shirt | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Protective Pants | <input type="checkbox"/> Yes | <input type="checkbox"/> No | 6. Hardhat | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Gloves | <input type="checkbox"/> Yes | <input type="checkbox"/> No | 7. Boots | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Face/Neck Protection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | 8. Goggles | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

IV. Fatalities

A. Type of accident

- 1. Aircraft
- 2. Natural (lightning, drowning, etc.)
- 3. Medical (heart, stroke, heat, etc.)
- 4. Struck by Falling Object
- 5. Vehicle
- 6. Smoke
- 7. Entrapment
- 8. Other

B. Where fatality(s) occurred

- 1. Fire site
- 2. Incident Base
- 3. In transit
- 4. Other

C. Fatalities

1. Name _____	D.O. B. _____			
Employment status	<input type="checkbox"/> Career	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Casual	<input type="checkbox"/> Other
2. Name _____	D.O. B. _____			
Employment status	<input type="checkbox"/> Career	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Casual	<input type="checkbox"/> Other
3. Name _____	D.O. B. _____			
Employment status	<input type="checkbox"/> Career	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Casual	<input type="checkbox"/> Other
4. Name _____	D.O. B. _____			
Employment status	<input type="checkbox"/> Career	<input type="checkbox"/> Seasonal	<input type="checkbox"/> Casual	<input type="checkbox"/> Other

Note: In the event of fatality(s), do not release name(s) until next of kin are notified.

D. Employment agency _____

E. Unit name and address _____

F. Firefighting part of employee's job description Yes No

G. Person to contact for additional information _____ Phone _____

Home unit address _____

H. Brief description of accident _____

FIRE ENTRAPMENT/FATALITY
FIRST RESPONSE FORM

Your unit has just experienced a fire entrapment and/or fatality: it is imperative that you take some immediate actions to facilitate the investigation, prior to the arrival of the incoming team. You have been faxed this First Response form by the Entrapment Investigation Team to help you perform the crucial steps needed prior to the arrival of the team.

	Responsible Person	Date/Time Assigned
AT THE SCENE		
1. ISOLATE THE SCENE WITH LAW ENFORCEMENT PERSONNEL(Night or Day, get your L.E.O.'s involved). Try to keep any disturbance of the scene to a minimum.		
2. Once care has been provided for any injured personnel, retrieve their PPE and line gear- the equipment specialists need to examine all PPE to determine its performance and to help calculate fire intensities, heat loads, etc.		
3. Remove all entrapped, uninjured individuals and others directly involved from the incident; keep them isolated from the media- do not begin interviews!		
4. In the event of fatalities, notify the County Sheriff. If feasible, leave bodies in place until investigators arrive on the scene. If remains are removed before the arrival of the investigating team, insure that photos are taken. Do not process exposed film in uncontrolled facilities.		
5. Restrict any low-level helicopter flights over the area: prop down-wash may disturb or cover evidence.		
6. Instruct all personnel on the incident of the need for any of their notes, times, weather observations, photos, etc.		
7. Contact Critical Incident SD.		
8. Initiate an airspace restriction (FAR 91.137).		

INJURED PERSONNEL		
1. Assign a person to act as liaison with the hospital. This person should perform this important function full time through the first critical days, so don't assign someone whose collateral duties would interfere.		
2. Once again, secure the injured personnel's PPE; In the past, fire shirts, fire pants and boots have been disposed of by hospital personnel; it is important that these items be preserved.		
3. Protect their privacy; These people have just suffered acute mental and/or physical trauma and shouldn't have themselves or their families subjected to intense outside scrutiny.		

AT THE OFFICE		
1. Secure Dispatch logs/Radio tapes.		
2. If there is an Incident Command Team managing the fire, you might consider ordering a replacement team.		
3. Notify your Agency Line Officer and the National Interagency Coordination Center.		
4. Assign a local Fire Information Officer to handle initial media contacts.		
5. Resource order a Type III helicopter for photography/transport of the investigating team.		
6. Assign local Agency person to act as liaison to the investigation team.		
7. Prepare a list of names, organizations, and telephone numbers of all personnel involved in the incident, and those who may offer witness statements (i.e. pilots, dispatchers, line officers, civilian observers, etc.).		
8. Initiate steps to obtain topographic maps, planimetric maps, and aerial photos of the area for use by the investigation team.		
9. Arrange for an initial meeting room/team HQ; this should be able to be secured from unauthorized personnel.		
10. Begin assembling any relevant paperwork: weather observations and forecasts; fire training and qualifications records; mobilization plans; time records of involved personnel; etc.		

Notes