Chapter 07
Safety and Risk Management

Introduction

The primary means by which we prevent accidents in wildland fire operations is through aggressive risk management. Our safety philosophy acknowledges that while the ideal level of risk may be zero, a hazard free work environment is not a reasonable or achievable goal in fire operations. Through organized, comprehensive, and systematic risk management, we will determine the acceptable level of risk that allows us to provide for safety yet still achieve fire operations objectives. Risk management is intended to minimize the number of injuries or fatalities experienced by wildland firefighters.

Policy

Firefighter and public safety is our first priority. All Fire Management Plans and activities must reflect this commitment. The commitment to and accountability for safety is a joint responsibility of all firefighters, managers, and administrators. Every supervisor, employee, and volunteer is responsible for following safe work practices and procedures, as well as identifying and reporting unsafe conditions.

Agency Specific Safety Policy Documents:

- ***BLM*** *- BLM Handbook 1112-1, 1112-2*
- ***FWS*** *- Service Manual 241 FW7, Firefighting*
- ***NPS*** *- DO-50 and RM-50 Loss Control Management Guideline*
- ***FS –*** *FSM 5100 and chapters, FSH-6709.11 Health and Safety Code Handbook*

For additional safety guidance, refer to:

- *Fireline Handbook* (PMS 410-1, NFES 0065).
- *Incident Response Pocket Guide (IRPG)* (PMS 461, NFES 1077)

Guiding Principles

The primary means by which we implement command decisions and maintain unity of action is through the use of common principles of operations. These principles guide our fundamental wildland fire management practices, behaviors, and customs, and are mutually understood at every level of command. They include Risk Management, Standard Firefighting Orders and Watch Out Situations, LCES and the Downhill Line Construction Checklist. These principles are fundamental to how we perform fire operations, and are intended to improve decision making and firefighter safety. They are not absolute rules. They require judgment in application.

Goal

The goal of the fire safety program is to provide direction and guidance for safe and effective management in all activities. Safety is the responsibility of everyone assigned to wildland fire, and must be practiced at all operational levels from the national fire director, state/regional director, and unit manager to employees in the field. Agency administrators need to stress that firefighter and public safety always takes precedence over property and resource loss. Coordination between the fire management staff and unit safety officer(s) is essential in achieving this objective.

Definitions

Safety: A measure of the degree of freedom from risk or conditions that can cause death, physical harm, or equipment or property damage.
Hazard: A condition or situation that exists within the working environment capable of causing physical harm, injury, or damage.
Risk: The likelihood or possibility of hazardous consequences in terms of severity or probability.
Risk Management: The process whereby management decisions are made and actions taken concerning control of hazards and acceptance of remaining risk.

Risk Management Process

Fire operations risk management is outlined in the *NWCG Incident Response Pocket Guide (IRPG)*. The five step process provides firefighters and fire managers a simple, universal, and consistent way to practice risk management by:

- Establishing situation awareness.
- Identifying hazards and assessing the risk.
- Controlling or eliminating hazards.
- Making decisions based on acceptability of remaining risk.
- Evaluating effectiveness of hazard controls and continuously re-evaluating the situation.

Job Hazard Analysis (JHA)/Risk Assessment (RA)

A completed JHA/RA is required for:

- Jobs or work practices that have potential hazards.
- New, non-routine, or hazardous tasks to be performed where potential hazards exist.
- Jobs that may require the employee to use non-standard personal protective equipment (PPE).
- Changes in equipment, work environment, conditions, policies, or materials.

- Supervisors and appropriate line managers must ensure that established JHAs are reviewed and signed prior to any non-routine task or at the beginning of the fire season.
  - ***BLM-*** *Additional RA information can be obtained at: http://web.blm.gov/portal/employeeresources/allemployees/safety/riskmanagment.php*

Work/Rest

To mitigate fatigue, agency administrators, fire managers, supervisors, incident commanders, and individual firefighters should plan for and ensure that all personnel are provided a minimum 2:1 work/rest ration (for every 2 hours of work or travel, provide 1 hour of sleep and/or rest). Work shifts that exceed 16 hours and/or consecutive days that do not meet the 2:1 work/rest ratio should be the exception. When this occurs, the following actions are required:

- Personnel will resume 2:1 work/rest ratio as quickly as possible.
- The Incident Commander or Agency Administrator will justify work shifts that exceed 16 hours and/or consecutive days that do not meet 2:1 work to rest ratio. Justification will be documented in the daily incident records, and must include mitigation measures used to reduce fatigue.
- The Time Officer's/Unit Leader's approval of the Emergency Firefighter Time Report (OF-288), or other agency pay document, certifies that the required documentation is on file and no further documentation is required for pay purposes.

The work/rest guidelines do not apply to aircraft pilots assigned to an incident. Pilots must abide by applicable Federal Aviation Administration (FAA) guidelines, or agency policy if more restrictive.

Length of Assignment

Assignment Definition

An assignment is defined as the time period (days) between the first full operational period at the first incident or reporting location on the original resource order and commencement of return travel to the home unit.

Length of Assignment

Standard assignment length is 14 days, exclusive of travel from and to home unit, with possible extensions identified below. Time spent in staging and preposition status counts toward the 14-day limit, regardless of pay status, for all personnel, including Incident Management Teams.

Days Off

To assist in mitigating fatigue, days off are allowed during and after assignments. Agency Administrators (AAs) (incident host or home unit) may authorize time off supplementary to mandatory days off requirements.

The authority to grant a day off with pay lies within 5 U.S.C. 6104, 5 CFR 610.301-306, and 56 Comp. Gen. Decision 393 (1977).

After completion of a 14 day assignment and return to the home unit, two mandatory days off will be provided (2 after 14). Days off must occur on the calendar days immediately following the return travel in order to be charged to the incident. (See Section 12.1-2) (5 U.S.C. 6104, 5 CFR 610.301-306, and 56 Comp. Gen. Decision 393 (1977). If the next day(s) upon return from an incident is/are a regular work day(s), a paid day(s) off will be authorized. Regulations may preclude authorizing this for non-NWCG and state/local employees.

Pay entitlement, including administrative leave, for a paid day(s) off cannot be authorized on the individual's regular day(s) off at their home unit. Agencies will apply holiday pay regulations, as appropriate. A paid day off is recorded on home unit time records according to agency requirements. Casuals (AD) are not entitled to paid day(s) off upon release from the incident or at their point of hire.

Contract resources are not entitled to paid day(s) off upon release from the incident or at their point of hire.

Home unit agency administrators may authorize additional day(s) off with compensation to further mitigate fatigue. If authorized, home unit program funds will be used. All length of assignment rules apply to aviation resources, including aircraft pilots, notwithstanding the FAA and agency day off regulations.

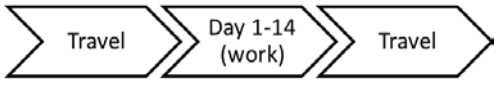
Assignment Extension

Prior to assigning incident personnel to back-to-back assignments, their health, readiness, and capability must be considered. The health and safety of incident personnel and resources will not be compromised under any circumstance.

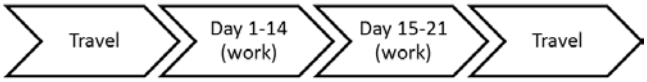
- Assignments may be extended when:
  - Life and property are imminently threatened.
  - Suppression objectives are close to being met.
  - A military battalion is assigned.
  - Replacement resources are unavailable, or have not yet arrived.

Upon completion of the standard 14-day assignment, an extension of up to an additional 14 days may be allowed (for a total of up to 30 days, inclusive of mandatory days off, and exclusive of travel). Regardless of extension duration, two mandatory days off will be provided prior to the 22nd day of the assignment.

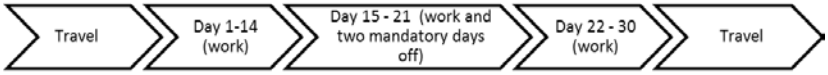
<u>14-Day Scenario</u>



21-Day Scenario



30-Day Scenario



Contracts, Incident Blanket Purchase Agreements (I-BPA), and Emergency Equipment Rental Agreements (EERA) should be reviewed for appropriate pay requirements and length of assignment. If the contract, I-BPA, or EERA do not address this, the incident Finance/Administration Section Chief or the procurement official should be consulted as to whether compensation for a day off is appropriate.

Single Resource/Kind Extensions

The section chief or incident commander will identify the need for assignment extension and will obtain the affected resource's concurrence. The section chief and affected resource will acquire and document the home unit supervisor's approval.

The incident commander approves the extension. If a convened geographic or national multi-agency coordinating group (GMAC/NMAC) directs, the incident commander approves only after GMAC/NMAC concurrence.

If the potential exists for reassignment to another incident during the extension, the home unit supervisor and the affected resource will be advised and must concur prior to reassignment.

Incident Management Team Extensions

Incident management team extensions are to be negotiated between the incident agency administrator, the incident commander, and the GMAC/NMAC (if directed).

Maximum Consecutive Days Worked- Home Unit

During extended periods of activity at the home unit, personnel will have a minimum of 1 day off in any 21-day period.

Driving Standard

All employees driving motor vehicles are responsible for the proper care, operation, maintenance, and protection of the vehicle, and to obey all federal and state laws.

The use of government-owned, rented, or leased motor vehicles is for official business only. Unauthorized use is prohibited.

General Driving Policy

- Employees must have a valid state driver's license in their possession for the appropriate vehicle class before operating the vehicle. Operating a government-owned or rental vehicle without a valid state driver's license is prohibited.
- All drivers whose job duties require the use of a motor vehicle will receive initial defensive driver training within three months of entering on duty and refresher driver training every three years thereafter.
- All traffic violations or parking tickets will be the operator's responsibility.
- All driving requiring a CDL will be performed in accordance with applicable Department of Transportation regulations.
- Seat belts must be available and used in agency motor vehicles. Without exception, seat belts must be worn at all times by motor vehicle operators and passengers, regardless of the distance to be traveled or the time involved. If any employee fails to fasten their seat belt while riding in a vehicle on official business, they are subject to disciplinary action as determined by local management.
- Employees operating any motor vehicle with a GVWR of 26,000 pounds or more, towing a vehicle 10,000 pounds GVWR or more, hauling hazardous material requiring the vehicle to be placarded, or transporting 16 or more persons (including the driver) must possess a valid Commercial Drivers License (CDL) with all applicable endorsements. Program funds are authorized to pay for the cost of CDL licensing fees and exams, necessary for employees to operate fire equipment. In those cases where a test has been failed and must be retaken, the employee will be responsible for costs associated with additional testing.
  - ***BLM*** *- All employees operating a Government motor vehicle will be required to submit Form DI-131 (Application for U.S. Government Motor Vehicle Operator's Identification Card) and OF-345 (Physical Fitness Inquiry for Motor Vehicle Operators). When the supervisor signs the DI-131, the employee is authorized to operate Government-owned or leased vehicles, or privately-owned vehicles on official business. Individual office forms equivalent to the OF-345 and DI-131 are acceptable.*
  - ***FS*** *- Policy requires all operators of government owned, or leased vehicles to have a Forest Service issued Operator's Identification Card (OF-346) indicating the type of vehicles or equipment the holder is authorized and qualified to operate.*
  - ***BLM/FWS/NPS –*** *The DOI has granted wildland fire agencies a waiver to allow employees between the ages of 18 and 21 to operate agency commercial fire vehicles using a state issued CDL under the specific conditions as stated below:*

- *Drivers with a CDL may only drive within the state that has issued the CDL and must comply with the state's special requirements and endorsements.*
- *These drivers must only drive vehicles that are equipped with visible and audible signals, and are easily recognized as fire fighting equipment. This excludes, but is not limited to, school buses used for crew transport and "low-boy" tractor trailers used for construction equipment transport.*
- *Supervisors must annually establish and document that these drivers have a valid license (i.e. that the license has not been suspended, revoked, canceled, or that the employee has not been otherwise unqualified from holding a license - 485 DM 16.3.B (1), ensure that the employee has the ability to operate the vehicle(s) safely in the operational environment assigned (485 DM 16.3.B (2), and review and validate the employee's driving record (485 DM 16.3.B(4)).*

Non-Incident Operations Driving

Refer to the current driving standards for each individual agency.

Mobilization and Demobilization

To manage fatigue, every effort should be made to avoid off unit (excluding IA response) mobilization and demobilization travel between 2200 hrs and 0500 hrs.

Incident Operations Driving

This policy addresses driving by personnel actively engaged in wildland fire suppression or all-risk activities; these include driving while assigned to a specific incident (check-in to check-out) or during initial attack fire response (includes time required to control the fire and travel to a rest location).

- Agency resources assigned to an incident or engaged in initial attack fire response will adhere to the current agency work/rest policy for determining length of duty day.
- No driver will drive more than 10 hours (behind the wheel) within any duty-day.
- Multiple drivers in a single vehicle may drive up to the duty-day limitation provided no driver exceeds the individual driving (behind the wheel) time limitation of 10 hours.
- A driver shall drive only if they have had at least 8 consecutive hours off duty before beginning a shift. Exception to the minimum off-duty hour requirement is allowed when essential to:
  - Accomplish immediate and critical suppression objectives.
  - Address immediate and critical firefighter or public safety issues.
- As stated in the current agency work/rest policy, documentation of mitigation measures used to reduce fatigue is required for drivers who exceed 16 hour work shifts. This is required regardless of whether the

driver was still compliant with the 10 hour individual (behind the wheel) driving time limitations.

Fire Vehicle Operation Standards

Operators of all vehicles must abide by state traffic regulations. Operation of all vehicles will be conducted within the limits specified by the manufacturer. Limitations based on tire maximum speed ratings and Gross Vehicle Weight restrictions must be followed. It is the vehicle operator's responsibility to ensure vehicles abide by these and any other limitations specified by agency or state regulations.

Management Controls to Mitigate Exposure

Management controls, engineering controls, equipment guards, and administrative procedures are the first line of defense against exposing an employee to a hazard. Personal protective equipment (PPE) will be used to protect employees against hazards that exist after all management controls are exhausted.

Wildland Fire Field Attire

Polyester, polypropylene, and nylon materials are not to be worn, because most synthetic fibers melt when exposed to flame or extreme radiant heat. Personnel should wear only undergarments made of 100 percent or the highest possible content of natural fibers, aramid, or other flame-resistant materials.

Personal Protective Equipment (PPE)

All personnel are required to use Personal Protective Equipment (PPE) appropriate for their duties and/or as identified in JHAs/RAs. Employees must be trained to use safety equipment effectively.

Aramid clothing should be cleaned or replaced whenever soiled, especially when soiled with petroleum products. Aramid clothing will be replaced when the fabric is so worn as to reduce the protection capability of the garment or is so faded as to significantly reduce the desired visibility qualities.

Any modification to personal protective equipment that reduces its protection capability such as iron-on logos, and stagging of pants, is an unacceptable practice and will not be allowed on fires.

Required Fireline PPE includes:

- Wildland fire boots
- Fire shelter
- Hard hat with chinstrap
- Goggles/safety glasses (as identified by JHAs/RAs)

- Ear plugs/hearing protection
- Yellow-long-sleeved aramid shirt
- Aramid trousers
- Leather or leather/flame resistant combination gloves. Flight gloves are not approved for fireline use.
- Additional PPE as identified by local conditions, material safety data sheet (MSDS), or JHA/RA

    - ***FS-*** *Shirt, trousers, and gloves used by USFS personnel must meet Forest Service specification 5100-91 (shirt), 5100-92 (trousers), 6170-5 (gloves), or be certified to the National Fire Protection Association (NFPA) 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting.*

Wildland Fire Boot Standard

Personnel assigned to wildland fires must wear a minimum of 8-inch high, lace-type exterior leather work boots with Vibram-type, melt-resistant soles. The 8-inch height requirement is measured from the bottom of the heel to the top of the boot. Alaska is exempt from the Vibram-type sole requirement.

All boots that meet the wildland fire boot standard as described above are required for firefighting and fireline visits, considered non-specialized PPE, and will be purchased by the employee (including AD/EFF) prior to employment.

- ***DOI-*** *The DOI has issued policy authorizing payment of a boot stipend by DOI agencies. See agency-specific guidance for implementation of the DOI policy.*

Fire Shelters

New Generation Fire Shelters (M-2002, Forest Service Specification 5100-606) are required for all wildland firefighters. For more information, refer to http://www.nifc.gov/fire_equipment/fire_shelter.htm

Training in inspection and deployment of new generation fire shelters will be provided prior to issuance. Firefighters will inspect their fire shelters at the beginning of each fire season and periodically throughout the year, to ensure they are serviceable.

Training shelters will be deployed at required Annual Fireline Safety Refresher Training. No live fire exercises for the purpose of fire shelter deployment training will be conducted.

Fire shelters will be carried in a readily accessible manner by all line personnel. The deployment of shelters will not be used as a tactical tool. Supervisors and firefighters must never rely on fire shelters instead of using well-defined escape routes and safety zones. When deployed on a fire, fire shelters will be left in place if it is safe to do so and not be removed pending approval of authorized

investigators. Firefighters must report the shelter deployment incident to their supervisor as soon as possible.

Head Protection

Personnel must be equipped with hardhats and wear them at all times while on the fireline. Hardhats must be equipped with a chinstrap, which must be fastened while riding in, or in the vicinity of, helicopters.
Acceptable hardhats for fireline use are:

- "Wildland Firefighter's Helmet" listed in a current or past edition of the GSA Wildland Fire Equipment Catalog. To view a current catalog, go to www.gsa.gov/fireprogram, click on "library" and then on "catalog"; or
- equivalent hardhat meeting the *(NFPA) 1977 Standard on Protective Clothing and Equipment for Wildland Fire Fighting* requirements, or
- equivalent hardhat meeting ANSI Z89.1-2003 Type 1, Class G or ANSI Z89.1-2009 Type 1, Class G.

Hardhats consist of two components - the shell and the suspension - which work together as a system. Alteration of either of these components compromises the effectiveness of the system (e.g. wearing hardhat backwards) and is not allowed. Both components require periodic inspection and maintenance. The useful service life begins when the hardhat is put into service, not the manufacture date specified on the hardhat. Specific inspection and maintenance instructions are found in Missoula Technology and Development Center (MTDC) Tech Tip publication, *Your Hardhat: Inspection and Maintenance* (0267-2331-MTDC). http://www.fs.fed.us/t-d/pubs/htmlpubs/htm02672331/index.htm.

Eye and Face Protection

The following positions require the wearing of eye protection (meets *ANSI Z87.1* Standards):

- Nozzle operator
- Chainsaw operator/faller
- Helibase and ramp personnel
- Wildland fire chemical mixing personnel
- Other duties may require eye protection as identified in a specific JHA/RA

Full face protection in the form of a face shield in compliance with *ANSI Z87.1* shall be worn when working in any position where face protection has been identified as required in the job specific JHA/RA: Batch Mixing for Terra-Torch®, power sharpener operators, etc.

Hearing Protection

Personnel who are exposed to a noise level in excess of 85db must be provided with, and wear, hearing protection. This includes, but is not limited to:

- Chainsaw operators/fallers.
- Pump operators.

- Helibase and aircraft ramp personnel.
- Wildland fire chemical mixing personnel.

Other duties may require hearing protection as identified in a specific JHA/RA. Employees may be required to be placed under a hearing conservation program as required by *29 CFR 1910.95*. Consult with local safety & health personnel for specifics regarding unit hearing conservation programs.

Neck Protection

Face and neck shrouds are not required PPE. The use of shrouds is not required and should be as a result of onsite risk analysis. If used, face and neck shrouds shall meet the requirements of FS specification 5100-601 or *NFPA 1977 Standard on Protective Clothing and Equipment for Wildland Fire Fighting.*

Shrouds should be positioned in a manner that allows for immediate use. For additional information see MTDC Tech Tip *Improved Face and Neck Shroud for Wildland Firefighters, 2004* (0451-2323-MTDC).
http://fsweb.mtdc.wo.fs.fed.us/pubs/htmlpubs/htm04512323/index.htm

Leg Protection

All chainsaw operators will wear chainsaw chaps meeting the United States Forest Service Specification 6170-4F or 4G. All previous Forest Service specification chainsaw chaps must be removed from service. Chainsaw chaps shall be maintained in accordance with MTDC Publication, *Inspecting and Repairing Your Chainsaw Chaps - User Instructions* (0567-2816-MTDC)
http://www.fs.fed.us/t-d/pubs/htmlpubs/htm05672816/page01.htm

Respiratory Protection

Respiratory protection should only be implemented once engineering and administrative controls are exhausted. The need for respiratory protection during wildland fire operations must be determined by each agency. The requirements for respirator use are found in 29 CFR Part 1910.134.

Only NIOSH-approved respirators shall be used. Several respiratory-type products are marketed to wildland firefighters but are not NIOSH-approved (e.g. shrouds with filtration devices).
Managers and supervisors will not knowingly place wildland firefighters in positions where exposure to toxic gases or chemicals that cannot be mitigated and would require the use of self-contained breathing apparatus.

Managers will not sign cooperative fire protection agreements that would commit wildland firefighters to situations where exposure to toxic gases or chemicals would require the use of self-contained breathing apparatus.

- ***FS** - FSM – 5130- Self-Contained Breathing Apparatus - Wildland firefighters may use only SCBA which are compliant with NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for*

Emergency Services. SCBA may only be used when contaminants from vehicle, dump, structure, or other non-wildland fuel fire cannot be avoided while meeting wildland fire suppression objectives (29 CFR 1910.134, Respiratory Protection). If such an apparatus is not available, avoid exposure to smoke from these sources. The acquisition, training, proper use, employee health surveillance programs, inspection, storage, and maintenance of respiratory protection equipment must comply with applicable National Fire Protection Association standards and 29 CFR 1910.134, and be justified by a Job Hazard Analysis. Where the acquisition and use of an SCBA is approved, it may be carried only on a fire engine and its use must be consistent with FSM 5130.

Specialized or Non Standard Personal Protective Equipment (PPE)

Specialized PPE not routinely supplied by the agency (e.g. prescription safety glasses, static-resistant clothing, cold weather flame resistant outer wear, etc.) required to perform a task safely must be procured in accordance with agency direction, and supported by a JHA/Risk Assessment.

A JHA/Risk Assessment must be completed and reviewed by the Unit Safety Officer and the supervisor's approval is required. Items must meet agency and industry standards for specific intended use. Cold weather flame resistant outer wear shall be in compliance with NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting*. All cold weather inner wear should be composed of 100% or the highest possible content of natural fibers (cotton, wool or silk) or other flame resistant material such as aramid.

High Visibility Vests

In order to meet 23 CFR 634, high visibility apparel should be worn whenever a firefighter is working on or in the right of way of a public roadway.

Employees must wear high visibility safety apparel that meets ANSI/ISEA 107-2004, Class 2 or 3, or ANSI/ISEA 207-2006. Apparel, including vests, that meets ANSI/ISEA 107-2004 and ANSI/ISEA 207-2006 currently does not meet the flame resistance requirements of the NFPA Standard on Protective Clothing and Equipment for Wildland Fire Fighting.

Exceptions:
The high visibility safety apparel should not be worn if:

- There is a reasonable chance that the employee may be exposed to flames, high heat, or hazardous materials.
- The high visibility garment hinders an employee's ability to do their job because it prevents necessary motion or because it limits access to necessary equipment such as radios or fire shelters.

Additional information is available in the Missoula Technology and Development Center (MTDC) report, *High-Visibility Garments and Worker*

Safety on Roadways (1151-2811-MTDC).
http://fsweb.mtdc.wo.fs.fed.us/php/library_card.php?p_num=1151%202811

Fireline Safety

Incident Briefings

Fire managers must ensure that safety briefings are occurring throughout the fire organization, and that safety factors are addressed through the IC or their designee and communicated to all incident personnel at operational briefings. The identification and location of escape routes and safety zones must be stressed. A briefing checklist can be found in the *Incident Response Pocket Guide (IRPG).*

LCES - A System for Operational Safety

LCES will be used in all operational briefings and tactical operations as per the *Incident Response Pocket Guide (IRPG).*

- L - Lookout(s)
- C - Communication(s)
- E - Escape Route(s)
- S - Safety Zone(s)

Incident Safety Oversight

Agency administrators are responsible for safety oversight, and may request additional safety oversight as needed.

Examples may include:

- A fire escapes initial attack or when extended attack is probable.
- There is complex or critical fire behavior.
- There is a complex air operation.
- The fire is in an urban intermix/interface.
- Other extraordinary circumstances.

Every individual has the right to turn down unsafe assignments. When an individual feels an assignment is unsafe, they also have the obligation to identify, to the degree possible, safety alternatives for completing that assignment. The IRPG contains a process for How to Properly Refuse Risk.

Smoke and Carbon Monoxide

It is important to note that smoke is just one of the potential risks faced by wildland firefighters. Site-specific hazards and mitigations need to be identified (using JHA/RA) to reduce firefighter exposure to smoke and potential carbon monoxide which includes evaluating and balancing all the risks associated with the operational objectives.

From an incident management perspective, smoke impacts need to be analyzed and risk assessment completed using the ICS-215A, Incident Action Plan Safety Analysis worksheet.

Location of Fire Camps and Plans to Remain in Place

Fire camps should be located in areas that will service the incident for the long term without having to relocate. Due to such factors as extreme fire behaviors, fire camp locations might be compromised. Incident commanders are to be especially vigilant to quickly identify situations that may put their fire camp(s) or any other adjacent fire camps in jeopardy. As such, planning for evacuation and/ or remain in place actions should be considered. Evacuation plans at a minimum shall include:

- Documented risk assessment
- Trigger points
- Egress routes
- Transportation for all personnel
- Accountability for all personnel
- Those individuals not meeting 310-1 qualifications will be considered escorted visitors as addressed elsewhere in this chapter.
  - ***FS****- At a minimum, plans shall also include:*
    - *ICP protection strategy referenced in the IAP.*
    - *Live-ability considerations including air quality, functionality of location and facilities, and safety factors for post burn conditions.*

Standard Safety Flagging

The NWCG recommends the following Safety Zone/Escape Route flagging for wildland fire activities:

- Hot-pink flagging marked "Escape Route" (NFES 0566). Crews with colorblind members may wish to carry and utilize fluorescent chartreuse flagging (NFES #2396).
- Hazards. Yellow with black diagonal stripes, 1 inch wide (NFES 0267). If the above recommendation is not utilized on an incident, the incident will need to identify the selected color and it make known to all firefighters.

Emergency Medical Planning and Services

Incident Emergency Management Planning

To achieve successful medical response within incident management, agency home units will take the necessary steps to ensure incidents of all complexity levels have an Incident Emergency Plan, standardized communication center protocols, and an incident medical plan that satisfies the requirements found in NWCG memo number 025-2010 (http://www.nwcg.gov/general/memos/nwcg-025-2010.html). This will include an expanded block eight of the ICS-206, Medical Plan form, detailing available resources (ground and air), roles, responsibilities, and hazard mitigations.

Air Ambulance Coordination

Unit and state/regional level fire program managers should ensure that procedures, processes, and/or agreements for use of local and regional air ambulance services are stated in writing and effectively coordinated between the fire programs, the dispatch/logistics centers, and the service providers.

Incident Emergency Medical Services

Agencies will follow interim NWCG minimum standards for incident emergency medical services as defined in Appendix K (NWCG#011-2208) to assist wildland fire incident commanders with determining the level and number of emergency medical resources and related supplies needed based upon the number of incident personnel. This standard as well as other incident medical information can be found on the NWCG Incident Emergency Medical Subcommittee website at:
http://www.nwcg.gov/branches/pre/rmc/iems/index.html

Incidents that have established Medical Units shall follow the direction as outlined in *Interim NWCG Minimum Standards for Medical Units Managed By NWCG Member Agencies* at:
http://www.nwcg.gov/branches/pre/rmc/iems/policyguides/minimum_stds_for_medical_units.pdf

Home units that choose to utilize and support higher level medical responders to provide medical support for internal agency medical emergencies (beyond basic first aid/CPR) may do so; however, certification and credentialing must follow respective state laws and protocols.

Unexploded Ordnance

General guidance is as follows:

- If Unexploded Ordnance (UXO) is suspected, do not enter the area.
- Small arms (rifle and shotgun) munitions areas should be flagged and avoided by fire personnel.
- For suspected larger munitions, the area must be avoided by fire personnel and contact local law enforcement bomb squad or nearest Department of Defense agency.
- Each unit will determine which employees are authorized to enter known or potential hazardous substance release sites, and the responsibility for these determinations remains with each agency administrator.
- For additional UXO safety information, see current IRPG.

Hazardous Materials

Employees that discover any unauthorized waste dump or spill site that contains indicators of potential hazardous substances (e.g., containers of unknown substances, pools of unidentifiable liquids, piles of unknown solid materials,

unusual odors, or any materials out of place or not associated with an authorized activity) should take the following precautions:

- Follow the procedures in the IRPG.
- Treat each site as if it contains harmful materials.
- Do not handle, move, or open any container, breathe vapors, or make contact with the material.
- Move a safe distance upwind from the site.
- Contact appropriate personnel. Generally, this is the Hazardous Materials Coordinator for the local office.
- Firefighters need to immediately report H_2S or potential exposure and seek immediate medical care.
- ***BLM/FWS/NPS -*** *Agencies require that all field personnel complete a First Responder Awareness training. Firefighters are required to take an annual refresher for Hazardous Material protocol.*

The following general safety rules shall be observed when working with chemicals:

- Read and understand the Material Safety Data Sheets.
- Keep the work area clean and orderly.
- Use the necessary safety equipment.
- Label every container with the identity of its contents and appropriate hazard warnings.
- Store incompatible chemicals in separate areas.
- Substitute less toxic materials whenever possible.
- Limit the volume of volatile or flammable material to the minimum needed for short operation periods.
- Provide means of containing the material if equipment or containers should break or spill their contents.

Responding to Wildland Fires in or near Oil/Gas Operations

For those offices with oil and gas operations within their fire suppression jurisdiction, the following is the minimum standard operating procedures to help ensure the health and safety of wildland firefighters:

- Firefighters shall receive annual oil and gas hazard recognition and mitigation training.
- Local unit shall complete a JHA/RA for wildland fire suppression activities in oil and gas areas and provide a copy with a briefing to all local and incoming resources.
- Establish Response Protocols and proper decontamination procedures to minimize exposure to additional employees, equipment, and facilities. Protocols will include notification procedures to respective oil and gas company(s).
- Ensure oil and gas resource advisors are consulted.

- Ensure that at least one member of each squad or engine crew is knowledgeable in the use and data interpretation of the Hydrogen Sulfide gas monitor. Training on the device will include at a minimum:
  - Equipment charging and maintenance of sensors
  - Startup, zeroing, calibration, and bump testing procedures as recommended by the manufacturer.
  - How the monitor elicits a warning alarm (visual, auditory, vibration)
- Understand Peak Reading, Short Term Exposure Limits (STEL), and Time Weighted Averages.
  - Understand how to set the monitors alarm threshold.
- The monitor's alarm shall be set at the current American Conference on Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (10 PPM 2008) and STEL (15 PPM 2008).
- If hydrogen sulfide gas (H_2S) is encountered, immediately disengage and leave area.
- Do not establish incident base camps or staging areas in or near oil and gas operations.

The following websites provide additional information and training resources:

- http://www.nifc.gov/video/HazMat.wmv
- http://iirdb.wildfirelessons.net/main/Reviews.aspx
- www.nfpa.org/assets/files/pdf/Sup10.pdf

Responding to Wildland Fires in or Near Radioactive Locations

Abandoned uranium mines and other potential radioactive sites exist in many areas of public lands. When these areas are identified, local management should provide information and direction on operations to be used. General knowledge and understanding of potential radiation exposure is necessary for wildland fire program management to make valid risk management decisions in these areas. The following websites provide this information and general guidelines:

- http://www.nifc.gov/policies/red_book/doc/RadiationDocument.pdf
- http://www.nifc.gov/policies/red_book/doc/RadiationGuidance.pdf

Hazardous Water Sources

Many water sources used during fire suppression activities may appear harmless, but contain hazardous materials (e.g. hydraulic fracturing fluid, cyanide, sewage, corrosives). These hazardous water sources may pose threats to personnel health and firefighting equipment. Indicators that a water source may be hazardous include proximity to active or inactive mining operations, gas/oil wells, water treatment facilities, or other industrial operations. In many cases, these hazardous water sources may not be fenced and no warning signs may be present.

Suppression personnel should evaluate water sources to ensure they do not contain hazardous materials. If unsure of the contents of a water source, personnel should not utilize the water source until its contents can be verified. Dispatch centers, Resource Advisors, or on-scene personnel can assist with verification of safe water sources. Information about known hazardous water sources should be included in operational briefings.

Hydrogen Cyanide (HCN) Exposure

Synthetic materials such as plastics, nylon, Styrofoam®, and polyurethane can produce HCN. HCN exposure can disrupt the body's ability to use oxygen, cause asphyxia, and cause carbon monoxide poisoning. Common items such as sofas, carpeting, vehicles, and other products routinely found in the wildland can produce smoke with HCN.

Symptoms of HCN poisoning include bitter almond odor on breath, burning taste in mouth, stiffness of lower jaw, feeling of numbness or constriction in throat, weakness, and headache.

Follow hazardous materials protocols contained in the IRPG to mitigate exposure to HCN. If personnel may have been exposed to HCN, immediate referral to a health care facility capable of toxicology testing and treatment of HCN exposure is required.

Safety for Non-Operational Personnel Visiting Fires

A wide variety of personnel such as agency administrators, other agency personnel, dignitaries, members of the news media, etc may visit incidents. The following standards apply to all visitors.

Visits to an Incident Base

Recommended field attire for visits to incident base camps and other non-fireline field locations:

- Lace-up, closed toe shoes/boots with traction soles and ankle support.
- Trousers.
- Long-sleeve shirt.
- For agency personnel, the field uniform is appropriate.

Visits to the Fireline/RX Burns

- Visits to the fireline must have the approval of the IC/Burn Boss.
- Visitors must maintain communications with the DIVS or appropriate fireline supervisor of the area they are visiting.
- Required PPE:
  - Wildland fire boots.
  - Yellow long-sleeved aramid shirts.
  - Aramid trousers.
  - Hard hat with chinstrap.

- Leather or leather/flame resistant combination gloves. Flight gloves are not approved for fireline use.
- Fire shelter.

- Required field attire:
  - Undergarments made of 100 percent or the highest possible content of natural fibers, aramid, or other flame-resistant materials.
- Required equipment/supplies:
  - Hand tool.
  - Water canteen.

Fireline Logistical Support

Personnel performing fireline logistical support duties (e.g. bus drivers, supply delivery/retrieval, incident drivers, non-tactical water delivery, etc.) must meet the following requirements:

- Complete fire shelter training
- Fireline PPE
- Receive an incident briefing
- Ensure adequate communications are established
- other requirements (if any) established by the Incident Commander
- A Work Capacity Test (WCT) is not required unless required for a specific position defined in the PMS 310-1.

Visits to the Fireline

Visits (such as media visits or political/administrative tours) to hazardous areas of the fire or areas that pose a fire behavior threat will be managed by meeting the requirements below.

Visitors to the Fireline/RX Burns may be "Non-Escorted" or "Escorted" depending on the following requirements:

Non-Escorted Visits

Visitors must have an incident qualification with a minimum physical fitness level of "light" to visit the fireline unescorted.

- Must have adequate communications and radio training.
- Completed the following training:
  - Introduction to Fire Behavior (S-190).
  - Firefighter Training (S-130).
  - Annual Fireline Safety Refresher Training.
- Deviation from this requirement must be approved by the IC.

The law enforcement physical fitness standard is accepted as equivalent to a "light" WCT work category.

Escorted Visits

All non-incident, non-agency, visitors lacking the above training and physical requirements must be escorted while on the fireline.

- Visitors must receive training in the proper use of PPE.
- Requirement for hand tool and water to be determined by escort.
- Visitors must be able to walk in mountainous terrain and be in good physical condition with no known limiting conditions.
- Escorts must be minimally qualified as Single Resource Boss. Any deviation from this requirement must be approved by the IC.

Helicopter Observation Flights

Visitors who take helicopter flights to observe fires must receive approval from the Incident Commander, a passenger briefing, and meet the following requirements:

- Required PPE:
  - Flight helmet
  - Leather boots
  - Flame-resistant clothing
  - All leather or leather and aramid gloves

Occasional passengers/visitors have no training requirement, but a qualified flight manager must supervise loading and unloading of passengers.

Fixed-Wing Observation Flights

No PPE is required for visitors and agency personnel who take fixed-wing flights to observe fires. However, a passenger briefing is required, and the flight level must not drop below 500 feet AGL.

Six Minutes for Safety Training

It is recommended that daily Six Minutes for Safety training be conducted that focuses on high-risk, low frequency activities that fire personnel may encounter during a fire season. A daily national Six Minutes for Safety briefing can be found at: http://www.nifc.gov/sixminutes/dsp_sixminutes.php or the National Incident Management Situation Report.

SAFENET

SAFENET is a form, process, and method for reporting and resolving safety concerns encountered in any aspect (e.g., preparedness, training, etc.) of wildland fire or all hazard incident management. The information provided on the form will provide important, safety-related data to the National Interagency Fire Center, and determine long-term trends and problem areas.

The objectives of the form and process are:

- To provide immediate reporting and correction of unsafe situations or close calls in wildland fire.
- To provide a means of sharing safety information throughout the fire community.
- To provide long-term data that will assist in identifying trends.
- Primarily intended for wildland and prescribed fire situations, however, SAFENET can be used for training and all hazard events.

Individuals who observe or who are involved in an unsafe situation shall initiate corrective actions if possible, and then report the occurrence using SAFENET. You are encouraged, but not required, to put your name on the report. Prompt replies to the originator (if name provided), timely action to correct the problem, and discussion of filed SAFENETs at local level meetings encourage program participation and active reporting.

SAFENET is not the only way to correct a safety-related concern and it does not replace accident reporting or any other valid agency reporting method. It is an efficient way to report a safety concern. It is also a way for front line firefighters to be involved in the daily job of being safe and keeping others safe, by documenting and helping to resolve safety issues. SAFENETs may be filed:

- Electronically at http://safenet.nifc.gov;
- Verbally by telephone at 1-888-670-3938; or
- By SAFENET Field Card

The SAFENET Field Card is can be used by wildland fire personnel to immediately identify and report unsafe situations or close calls that should receive immediate resolution/mitigation. If the situation cannot be resolved at the local/incident level, the reporting individual is encouraged to follow the formal SAFENET submission process stated above. SAFENET Field Cards are available at: http://safenet.nifc.gov

Accident/Injury Reporting

The Occupational Safety and Health Administration (OSHA) mandates that all accidents and injuries be reported in a timely manner. This is important for the following reasons:

- To protect and compensate employees for incidents that occur on-the-job.
- To assist supervisors and safety managers in taking corrective actions and establish safer work procedures.
- To determine if administrative controls or personal protective equipment are needed to prevent a future incident of the same or similar type.
- To provide a means for trend analysis.

Employees are required to immediately report to their supervisor every job-related accident. Managers and supervisors shall ensure that an appropriate level of investigation is conducted for each accident and record all personal injuries and property damage. Coordinate with your human resources office or administrative personnel to complete appropriate Office of Worker's Compensation (OWCP) forms. Reporting is the responsibility of the injured employee's home unit regardless of where the accident or injury occurred.

- ***DOI-*** *employees will report accidents using the Safety Management Information System (SMIS) at https://www.smis.doi.gov/. Supervisors shall complete SMIS report within six working days after the accident/injury.*
- ***FS-*** *employees will use the Safety and Health Information Portal System (SHIPS) through the Forest Service Dashboard at http://fsweb.asc.fs.fed.us/HRM/owcp/WorkersComp_index.php*

Required Treatment for Burn Injuries

The following standards will be used when any firefighter sustains burn injuries, regardless of agency jurisdiction.

After on-site medical response, initial medical stabilization, and evaluation are completed, the Agency Administrator or designee having jurisdiction for the incident and/or firefighter representative (e.g. Crew Boss, Medical Unit Leader, Compensations for Injury Specialist, etc.) should coordinate with the attending physician to ensure that a firefighter whose injuries meet any of the following burn injury criteria is immediately referred to the nearest regional burn center.

It is imperative that action is expeditious, as burn injuries are often difficult to evaluate and may take 72 hours to manifest themselves. These criteria are based upon American Burn Association criteria as warranting immediate referral to an accredited burn center.

The decision to refer the firefighter to a regional burn center is made directly by the attending physician or may be requested of the physician by the agency administrator or designee having jurisdiction and/or firefighter representative.

The Agency Administrator or designee for the incident will coordinate with the employee's home unit to identify a Workers Compensation liaison to assist the injured employee with workers compensation claims and procedures. Workers Compensation benefits may be denied in the event that the attending physician does not agree to refer the firefighter to a regional burn center.

During these rare events, close consultation must occur between the attending physician, the firefighter, the Agency Administrator or designee and/or firefighter representative, and the firefighter's physician to assure that the best possible care for the burn injuries is provided.

Burn Injury Criteria

- Partial thickness burns (second degree) involving greater than 5% Total Body Surface Area (TBSA).
- Burns (second degree) involving the face, hands, feet, genitalia, perineum, or major joints.
- Third-degree burns of any size are present.
- Electrical burns, including lightning injury are present.
- Inhalation injury is suspected.
- Burns are accompanied by traumatic injury (such as fractures).
- Individuals are unable to immediately return to full duty.
- When there is any doubt as to the severity of the burn injury, the recommended action should be to facilitate the immediate referral and transport of the firefighter to the nearest burn center.

A list of burn care facilities can be found at:
http://www.blm.gov/nifc/st/en/prog/fire/im.html.

For additional NWCG incident emergency medical information see:
http://www.nwcg.gov/branches/pre/rmc/iems/index.html

Critical Incident Management

The NWCG has published the *Agency Administrator's Guide to Critical Incident Management* (PMS 926). This guide is designed as a working tool to assist agency administrators with the chronological steps in managing a critical incident. This document includes a series of checklists, which outline agency administrator's and other functional area's oversight and responsibilities. The guide is not intended to replace local emergency plans or other specific guidance that may be available, but should be used in conjunction with existing SOPs. Local units should complete the guide, and review and update at least annually. This guide is only available electronically at:
http://www.nwcg.gov/pms/pubs/pubs.htm.

Critical Incident Stress Management (CISM)

A critical incident may be defined as a fatality or other event that can have serious long term affects on the agency, its employees and their families or the community. Such an event may warrant stress management assistance. The local agency administrator may choose to provide CISM for personnel that have been exposed to a traumatic event.

The availability of CISM teams and related resources (e.g. defusing teams) varies constantly - it is imperative that local units pre-identify CISM resources that can support local unit needs. Some incident management teams include personnel trained in CISM who can provide assistance.