Learning Review (LR) Guide

USDA Forest Service

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1. Introduction

The Learning Review (LR) is the most robust of the Forest Service’s review processes and is designed to facilitate the development of a learning culture and to improve organizational and individual resilience. It embraces traditional forms of investigation for mechanical systems and introduces a systemic approach to assess the human dimension. The full suite of review products available to the Forest Service are outlined in a job aid located on the Wildland Fire Lessons Learned Center Web site.¹ A robust discussion on the suite of products offered begins on page 33 of this job aid.

The LR process is specifically designed to develop an understanding of the context that surrounds human action(s) and decision(s). The process is guided by the principle that our people are well intended and are intentionally striving to do the best they can in challenging situations.

There are fundamentally two ways to look at the human contribution to accidents and incidents. The first considers the actions of the individual to be right or wrong and then judges the individual to be good or bad (we call this the dispositional model). Hindsight played a heavy role in this judgment and labeling. This approach dominated previous investigation models and resulted in the suppression of information and distrust of the system that created investigation reports. The second way to study the human contribution to work outcomes is to consider the context that surrounded decisions or actions. This approach accepts that human behaviors are heavily influenced by situational factors. The LR focuses on understanding situational influences on individuals by asking why the actions and decisions made sense to the individuals at the time and identifying conditions that influenced those decisions and/or actions.

The LR assumes that all people make mistakes, and error serves as an opportunity to learn and improve. Our experience shows that errors cannot always be avoided. Therefore, we need an error-tolerant system. Accident reviews are based on the assumption that all people, no matter how much they try, make mistakes, and this is inherent in the human condition. Although we cannot

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¹ Go to http://www.wildfirelessons.net/viewdocument/r8-unplanned-events-job-aid.

If people are punished for being honest about what transpired, employees will soon learn that the personal costs to speaking up far outweigh the personal benefits. Improving the safety of a system is rooted in information. Anything that makes information more available is desirable and anything that blocks information flow should be avoided. It is for this reason that the Learning Review seeks to identify influences and never blame.
change the human condition, we can change the conditions under which humans work. Therefore, the LR focuses on the identification of conditions.  

Therefore, the LR focuses on the identification of conditions.

1.1 Learning from Accidents: A New View

The Learning Review differs from previous processes in that it recognizes and provides a framework for understanding the human contribution, especially in complex systems. Simple and complicated systems are governed by cause-and-effect relationships. Cause-and-effect relationships are the cornerstone for traditional investigations. Complex systems are governed by influence rather than cause because complex systems are composed of agents that learn (or adapt), and inherent in learning is a level of uncertainty.

Research has shown that it is impossible to predict all the potential situations that will arise in complex systems, and people are relied upon to make sense of these emerging conditions, learn in the moment, and innovate or adapt solutions to fit the conditions. It is important to recognize that these adaptations or innovations are common and most frequently result in successful outcomes. The same adaptations that succeed can lead to failure. The Learning Review is designed to accept adaptations as necessary to fulfill leaders' intent and meet operational demands. The LR focuses on the mapping and assessment of conditions, which has at least two purposes.

First, it helps us determine products that may help field-going personnel learn from a given incident or accident. It is critically important for field personnel to recognize changing conditions as soon as possible and to develop ways to be sensitive to those changes (situational awareness). This field learning product could be viewed as a way to improve or activate situational awareness.

Second, if we accept that a major role of leadership is to create a workplace wherein workers can be successful, then the LR products should provide leadership with an understanding of the conditions they can manage to increase the likelihood of success. For example, there are conditions that may create systemic vulnerabilities; these conditions exist in the system all the time and must be recognized as a source of continuous systemic risk. The organizational leadership may have the greatest influence on these conditions, and it is therefore necessary to bring these conditions to leadership's attention through an organizational learning product.

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1.2 Learning through Systems Improvement

One of the inherent goals of the Learning Review process is to develop an understanding of what influenced human decisions and actions. Another way of saying this is that we want to understand the decisions or actions as they relate to the context of the situation. This context can be seen as systemic pressures, but it is also normal system rewards, measurements, and even (perceived or actual) punishments. Sidney Dekker describes this as the view from inside the tunnel. This process could result in identifying "hard truths" that could be very valuable to organizational learning.

A second goal of the Learning Review process is to reduce bias in the analysis of the incident. While bias will never be completely removed from any review, every effort should be made to acknowledge its existence and reduce it where possible. The phased approach embedded within the Learning Review process is designed to help identify and reduce bias. In the interest of creating justness (fairness), the Learning Review products strive to both acknowledge and reduce individual and organizational bias.

The learning review is a systems-based approach that focuses on conditions surrounding decisions and actions. The following example illustrates how the learning review looks at complex systems and conditions:

Imagine you want one of your employees to drive from your office building in Golden, Colorado, to the Denver Airport. You provide directions to the employee using a list of roads and distances as shown below:

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In a simple system where conditions are predictable and familiar, these directions would likely suffice, as the route would never be affected by the unexpected (e.g., road construction, blocked by a traffic accident, the driver misses a turn, etc.). In the real world (a complex system), this route would work until the system delivered the unexpected; we commonly refer to this as surprise (or the unexpected). The driver would then need to adapt. In these situations we have relied on the driver to make sense of the changes and act according to training, experience, and guidance. If the changes are sudden, there may be a need to act quickly; if there is time, the driver may have the opportunity to be more deliberate.

Leadership can make systemic improvements once becoming aware of the system limitations and competing expectations placed on the driver. In this example, let’s start by supplying our employees with the following interactive map instead of the list above in order to improve the employees’ ability to recognize and/or determine options:
This diagram provides context in a way that the list cannot. If an employee is given access to an interactive version of this diagram such as “Google Maps,” the employee then has more tools that help him or her to adapt to unpredictable events. The agency has provided the employee with a preferred route, which the employee is expected to take unless faced with an unexpected circumstance. The difference is decision space. However, if the employee experiences an unpredicted event in which the tools provided are not robust enough to navigate, then that information needs to be reported up so that the system designers are aware of where brittleness exists in the system and additional improvements can be made (e.g., the map is inaccurate or incomplete).

The Learning Review is designed to better prepare employees and to provide leadership with a systemic understanding, as the example illustrates.

### 1.3 Shifting from Simple Compliance to Learning

Rules are put in place to improve safety. Rules are based on experience and can represent a social contract; for example, we drive on the right-hand side of the road and our contract with other drivers is that they will do the same. Rules are efficient; however, they are neither thorough (they cannot predict every outcome or situation) nor adaptive. Rules cannot be developed to apply to every situation. Also, they may need to be violated during an emergency; for example, if there is a sudden obstacle on the right side of the road, the driver may need to move left in order to avoid collision. The sudden
appearance of an obstacle is an unexpected condition that requires immediate action and may result in the violation of the right-side rule. The Learning Review seeks to understand the context of the action without labeling it as a violation.

Let’s examine rules from at least three perspectives: applicability, understandability and consistency. A rule’s applicability refers to how the rule applies or fits to a unique situation. Understandability reflects of how well worker understands the rule. Some rules are written in a way that makes them difficult, if not impossible, to follow. Consistency refers to the how the rule fits with other rules. Does it conflict with other rules, and does it work in the context of work, guidance, and regulations?

By design, the Learning Review avoids labeling actions as right or wrong. Judging that a decision is either bad or good is often based on the outcome alone. The outcome is the one thing that is not known to the worker at the moment the action is taken. If it were known that the action would lead to an adverse outcome, it would not be an accident (it would be suicide or a criminal act, such as sabotage). The Learning Review avoids confusing error with criminal activity and relies on maximizing learning from events; therefore, no punitive action will result from a Learning Review.

The above introduction is intended to explain the basic premise of the Learning Review process. The rest of this guide is intended to outline the nuts and bolts of conducting a Learning Review.
2. Objective, Principles, Purposes, and Policy

2.1 Learning Review Objective

The object of the Learning Review is to fulfill the agency’s responsibility to learn from an event.

2.2 Learning Review Principles

- Forest Service employees are well-intentioned and work within organizational systems to meet the expectations of leadership and the system.
- Accidents and incidents can be a byproduct of the uncertainty inherent in complex systems.
- Enhanced Accountability:
  - Prior to incidents, leaders and managers are responsible for knowing how the organization functions, and at this point, traditional forms of accountability can be valuable.
  - After the incident, prevention is based on learning, and the organization becomes accountable to learn all it can from the event.
- Actions and decisions are consequences, not causes. Following an event where the outcome was a surprise, the goal is to understand why the action or decision made sense to those involved at the time. This goal is based on the premise that “If it did not make sense to them at the time, they would not have done it.”
- Conditions shape decisions and actions; revealing these conditions will aid the agency and agency personnel in understanding how to recognize, change, and react to conditional pressures.

2.3 Learning Review Purpose

The purpose of the Learning Review is to learn from the event at multiple levels, including organizational and individual. The organizational level focuses on recognizing the conditions that can be changed to improve the system in order to prevent future negative outcome events. At an individual level, the products of the process should be designed to foster a broad understanding of how to recognize and respond to conditions that create high-risk situations.

- Promote a richer definition of accountability that considers how accountability was enacted prior to the event and holds the organization accountable to learn following the event.
- Protect employees operating within the scope of their employment from being punished within the Forest Service by putting decisions/actions in context to help establish why those decisions/actions were implemented.
• Focus on all aspects of work that contributed to the outcomes, including those that are viewed as positive, normal, or negative.
• Discover and report “hard truths.”
• Reduce bias as much as possible.

2.4 Policy

**Accident prevention is the key objective of any learning Review!** Information derived from any review of an incident will only be used by the agency or agencies for accident-prevention purposes.

The Learning Review will not be used as the basis for disciplinary action or to place blame on employees. This is in accordance with Executive Order 12196 paragraph 1-201[f], CFR 1904.36, and CFR 1960. These laws apply specifically to federal employees (States may refer to specific state regulations).

**The Forest Service will not use products and information that were the result of the Learning Review for administrative, disciplinary, or legal purposes.**

In the past, accident reports have been used for multiple purposes, including protecting the agency from lawsuits. Under the Coordinated Response Protocol (CRP) process, the agency’s document for protection from lawsuits is the Claims Investigation Report. This report is written by the Law Enforcement and Investigations arm of the CRP process, which is separate from the Learning Review.

2.5 Activation of a Learning Review

A Learning Review is usually associated with the initiation of a Coordinated Response Protocol (CRP)-level response. Only the Designated Agency Safety and Health Official (DASHO) has the authority to initiate a CRP. Learning Reviews can be initiated outside of a CRP by anyone with budget authority. These types of Learning Reviews can be very similar to a complex Facilitated Learning Analyses (FLA).^6^

Outcome may not be an accurate indication of the complexity of an event; as a result, the Learning Review is a scalable process, which much like the Incident Command System, encourages expanding or shrinking the team to meet increased and decreased needs as appropriate. Additional specialists and subject-matter experts may be called once the team is in place and begins to understand what occurred and what may be needed.

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^6^ The major differences between Learning Reviews and Facilitated Learning Analyses are that Learning Reviews are overseen by the Office of Innovation and Organizational Learning (IOL), are required to use both internal and external focus groups, and will put forward recommendations. FLAs are not necessarily overseen by IOL, are not required to use focus groups, and are encouraged not to make recommendations. For a better understanding of why a CRP would be initiated, please refer to the CRP Guide.
The Letter of Delegation should instruct the Learning Review Team (LRT) to follow the Learning Review Guide and avoid including any influences that attempt to direct the team to seek specific findings or to place emphasis on any specific area. The CRP Response Leader and/or Learning Review Team Leader will act as a first line of defense to prevent internal and external stakeholders from biasing the Learning Review Team.

One of the goals of the Learning Review process is to develop an understanding of what influenced the decisions and actions that were made leading up to the event under review. This process could result in "hard truths" that could be very valuable to the process of organizational learning. In the past, Letters of Delegation and guidance from Agency Administrators have steered teams to find answers to specific questions or avoid specific topics, which can result in undesired and unintended bias. Therefore, this practice should be avoided.

### 2.6 Roles and Responsibilities

#### 2.6.1 Response Leader (Only present in the case of a CRP-level response)

- Has delegated authority from the Chief.
- Coordinate access to incident personnel during the response to minimize further trauma. Coordinates access to witnesses with the home unit representative.
- Coordinate interactions between the Learning Review Team, the Critical Incident Stress Management (CISM) Team, and the Law Enforcement and Investigations (LEI) Team.
- Coordinate with a locally appointed family liaison representative to be aware of all family needs.
- Liaise with local and regional Line Officers, the DASHO, and other Forest Service personnel as appropriate.
- Coordinate release of information.
- Coordinate with the Law Enforcement Team leader to appoint Fire and Aviation (FAM) Medical Program Manager as POC for coordination with Coroner (as needed).
- Coordinate with the Occupational Safety and Health Administration (OSHA), the National Transportation Safety Board (NTSB), the Office of Inspector General (OIG), and other appropriate external agencies as needed and to the extent possible.
- Will have final approval authority over the products presented to the Learning Review Board.
2.6.2 Learning Review Team Leader

- Coordinate the initial inquiry (Data Collection Phase) and participates in the Analysis and Sensemaking Phase as a Co-Lead.
- Liaise with Office of Innovation and Organizational Learning (IOL) throughout the process.
- May be augmented by one or more of the following:
  - Human Factors/Performance subject-matter expert (SME)
  - Technical and Community-of-Practice SMEs (including Aviation SMEs; see Aviation Investigation Procedures Addendum)
  - SMEs from the academic community as needed
  - Documentation Specialist
  - Writer/Editor
- Encourage the team to suspend judgment and remain objective during the Data Collection Phase and determines when the Analysis and Sensemaking Phase should begin.
- Collaborate with IOL and the Community-of-Practice SMEs in the development of recommendations, most frequently through focus groups.
- Participate in the development of learning products.

2.6.3 Subject-Matter Expert (SME)

Subject-matter experts (SMEs) are specialists that bring a particular skill set and/or perspective to the Learning Review Team. The Learning Review Team Leader and the Response Leader should pay close attention to which skills and perspectives will provide insight to the Learning Review process. For example, in an aviation fatality, an Air Safety Investigator (ASI) should be among the SMEs on the Learning Review Team. If the incident is a felling accident, a Type 1 Faller (C Certifier) should be among the SMEs. Sometimes SMEs are selected because of the perspective they bring. If an Engine Captain played an integral role in the events of the day leading up to the accident, the Learning Review Team would be well served to bring in an Engine Captain as a team SME.

At least three different types of SMEs exist. One SME type provides expertise of a technical nature and fits into the analysis side of the Learning Review process. This type of SME can be from within the agency or could come from industry or the public sector. Another SME type provides insight to and understanding of the social influences and pressures within the system of work. This type of SME is associated with the Sensemaking aspect of the Learning Review process. A third SME type comes from academia. As the Learning Review unfolds, the Office of Innovation and Organizational Learning seeks out leading researchers in particular fields of interest to provide an educated outsider’s perspective on the system of work. Academic fields of interest used...
in the past include Complex Adaptive Systems, Communication, Culture, Sensemaking, Risk, and Adult Learning.

2.6.4 Writer/Editor

Good quality writer/editors are invaluable to the Learning Review process. This person works for the Learning Review Team Leader and if possible should not serve as the Information Specialist. Although the Information Specialist may possess a writer/editor skillset, the work includes two separate sets of duties and are located at different levels of the command hierarchy. The Information Specialist works for the CRP Response Leader to help guide the flow of information about the event to outside entities (including the media) while the Writer/Editor works for the Learning Review Team Leader and is charged with framing the accident narrative in a way that is both informative and easy to understand.

2.6.5 Documentation Specialist

A Documentation Specialist may be necessary to oversee the official case file. That person is in charge of tracking down, organizing, and cataloging documents relevant to the Learning Review. The Documentation Specialist usually works closely with the Learning Review Team’s Occupational Safety and Health Administration Liaison to coordinate with outside entities seeking the same kinds of information and may help locate and catalog information that outside organizations may need. All shared information should be coordinated through the CRP Response Leader and Information Specialist, but experience has shown that if our own internal people are involved in gathering some of that information, the overall impact to our employees can be greatly diminished.

2.6.6 Learning Review Team Process Coach

- Appointed by the Rocky Mountain Research Station Innovation and Organizational Learning Research, Development, and Application (IOL) and is included in all LR process phases.
- Is available as a sounding board and second opinion on controversial or complex issues and serves as a resource concerning procedure.
- Helps the Learning Review Team locate appropriate subject-matter experts.
- Serves as a Sensemaking (Phase 3) co-lead with the Learning Review Team Leader.

Note: In addition, a Forest Service Aircraft Technical Team (ATT) may support a Learning Review Team Leader in the creation of a Learning Review in accordance with this investigation guide, concurrent with or following an NTSB investigation (see Aviation Addendum).
2.7 Authority

The authority for Learning Review of accidents is established in the following:

- Public Law 107–203
- Title 5, USC 7902
- 29 CFR 1904.2
- 29 CFR 1960
- 41 CFR 101-37
- 49 CFR 830 NTSB

- Executive Order 12196
- FSM 5700, Aviation Management, Chapter 5720
- FSM 6700, Safety and Health Program, Chapter 6732.1
- FSM 5700, Aviation
3. Outline of the Learning Review Process

3.1 Introduction

![Learning Review Process Diagram](image)

Figure 3: Diagram of Learning Review Phases.

3.1.1 Phase 1: Team Selection – Delegation and Activation

- Standing Team Selection.
- Standing Team Leader group training coordinated by the Office of Human Performance, Innovation, and Organizational Learning.
- Standing Team Leader individual training.

If activated as part of a Coordinated Response Protocol (CRP), the Learning Review (LR) Team, along with the other Forest Service teams, will be coordinated under the CRP process. Once the Learning Review Team is assembled and on-site, the Learning Review Team transitions to Phase 2 of the process.

For a more in-depth look at Phase 1 of the Learning Review process, please see Chapter 4 and the CRP Guide.

3.1.2 Phase 2: Inquiry – Information Collection and Synthesis

- Collecting individual perspectives of those involved (individual narratives).
- Collecting data and information (technical records and factual information).
- Creating a detailed complex narrative that places actions and decisions in context. This section should provide the conditions as they were perceived by those involved, which likely influenced the decisions and actions.
- Vetting the narrative with principal individuals involved in the incident.
- Constructing the Network of Influences Map.
- Conducting an after-action review (AAR); what we learned about the process.

Once the Learning Review Team is assembled and on site, the Data Collection Phase begins. This phase begins to take an in-depth look at the event in question. It is the phase where reviewers look “down and in” to the event. The objective is to gather as much information as possible about what happened. It is easy to get pulled into trying to figure out why something happened before there is a full understanding of what happened. The boundary between phases 2 and 3 is somewhat fuzzy because figuring out why something happened is the beginning of Sensemaking.

The team must create a complex narrative of events that describes what happened. The narrative should showcase the event from as many perspectives as appropriate. Differences in perspective do not need to be resolved in a singular “correct” narrative. All perspectives are valued in the complex narrative. The team also must create a Network of Influences Map that begins to identify the pressures and influences that employees experienced prior to and during the event. This map of conditions is the initial step in trying to understand why the event happened and places key decisions/actions in context; actions and decisions are influenced by the conditions perceived by those involved in the incident.

Please see Chapter 5 for a more in-depth look at Phase 2.

**3.1.3 Phase 3: Analysis and Sensemaking**

Choosing between Analysis and Sensemaking is determined by the type of system you are reviewing. Simple and complicated systems would rely on analysis for data collection (mechanical), and complex systems require Sensemaking (human factors). Within a given accident you may need to use both Analysis and Sensemaking. The following list helps determine when sensemaking or analysis will be used.

- Analysis and Sensemaking continues to determine the process required. Much of the sensemaking will be conducted in focus group dialogues.
  - Analysis will be done for simple and complicated system components, e.g., an engine teardown for a suspected mechanical malfunction.
  - Sensemaking is the name given to the process of understanding actions and decisions in a complex system (any system that adapts to conditions or shows the ability to learn, e.g., any human system).
- Introducing SMEs for additional review (as needed), e.g., manufacturer engine teardown analysis, academic specialty analysis, or adult learning specialist.
• Creating or recommending individual learning product(s).
• Creating organizational learning products (the Learning Review Report itself is often one of the products).
• Developing and vetting recommendations. Use of focus groups and/or SMEs from the community of practice that will be affected by the recommendations (including organizational groups entrusted with training).
• Continuous process improvement – creating a Learning Review lessons learned and process improvement report.
• Creating the Learning Review Board presentation.
• Conducting an after-action review (AAR); what we learned about the process.

Phase 3 is more concerned with looking at the overall system of work. Phase 3 is also concerned about why this particular event happened but is perhaps more concerned with how this one accident fits in with the Forest Service system of work. Phase 3 tries to determine whether this accident was an anomaly or whether this event was spurred by conditions that have implications to the overall system of work. Phase 3 asks questions such as, “Do our policies provide adequate direction to our employees?” “Is our organization sending mixed messages to field-going personnel?” “Do our employees face goal conflicts of which management is unaware?”

The separation of Data Collection (Phase 2) from the Analysis and Sensemaking Phase (Phase 3) allows those involved to select the Sensemaking strategy that best fits the information obtained. This is an intentional way to allow data/information to drive the process of Sensemaking and to avoid the bias introduced by selecting a method too early. However, it does not represent a “firewall;” data collection is, in itself a Sensemaking process. The shift between information gathering and Analysis and Sensemaking should be a collaborative decision led by the Learning Review Team Leader with input from the Response Leader, Co-Lead, Sensemaking Team Coach, and IOL.

Some data deserves direct analysis. For example, if a failed mechanical component is found, such as an aircraft engine, the team engaged in data collection may send the component to the manufacturer for a teardown analysis. The analysis will show the physical problem with the part. Sensemaking during Phase 3 could be collaboration between the manufacturer, who understands the component in depth, and agency personnel, who have knowledge of how the component was used and maintained or additional context.

Academic review is optional, and Phase 3 may include the addition of academic and professional subject-matter experts to support the Sensemaking process. Humans are not like machines. They learn and adapt and are never fully predictable. Thus, specialists in social science, ergonomics, psychology, adult learning, or any other specialty field may be needed to provide input to the Analysis and/or Sensemaking Phase(s).
The phased approach recognizes that the skills needed to collect information from an incident may be different than the skills needed to analyze the information and to develop learning products from it. However, those involved with information collection will have knowledge of the event that will provide context needed for Sensemaking; therefore, this should be a collaborative effort involving both Co-Leads (Phase 2 Team Leader and IOL Process Coach) and the SME(s).

The Office of Innovation and Organizational Learning (IOL) will work in concert with the Learning Review Team to determine the type of specialist(s) needed and will arrange for the case study (ies) to be conducted.

Once the team has been assembled and has created a complex narrative and mapped the conditions; the event has been viewed from an organizational perspective; and academic specialists have provided a fresh outsider’s perspective, it is time to develop learning products, and if warranted, recommendations. Any recommendations developed by the Phase 3 team will be vetted through the communities of practice affected by the recommendation.

The community of practice is a label for people who will actually be affected by these recommendations in their everyday work. It could be the community of engine captains, heli-rappellers, trail crews, timber markers, or any other community that is relevant to the incident. These communities of practice will be provided the opportunity to provide feedback on the feasibility of implementing the proposed recommendation.

Once the communities of practice have vetted and agreed to the recommendations, the Phase 3 team will prepare a presentation for the Learning Review Board.

For a more in-depth look at Phase 3 of the Learning Review Process, please see Chapters 6 and 7.

3.1.4 Phase 4: Presentation of Learning Products and Recommendations to Agency Administrator

- Approve for distribution or develop subsequent learning products and recommendations.
- Make recommendations for additional study or review.
- Develop causal statements when required for regulators.

In the case of a Coordinated Response Protocol response, Phase 4 occurs when the Learning Review Board convenes. Phase 4 concludes when the recommendations are approved and assigned as action items in the Chief’s Safety Action Plan. The Safety Action Plan will spell out who is responsible for implementing the recommendations,
who will fund them, and who is responsible to follow up and ensure the recommendations are implemented and functioning as intended.

For a more in-depth look at Phase 4 in the Learning Review process, please see Chapter 8.
4. Learning Review Initiation (Phase 1)

4.1 Objective

Phase 1 objective:

- Ensure all team members are briefed and prepared to engage in Phase 2, the Data Collection Phase.

4.2 Learning Review Team Leader Training Requirements

- Completion of the FLA course.
- Completion of Standing Team Training.
- Experience with accident investigation or Learning Reviews as a Learning Review Team Leader, Air Safety Investigator (ASI), Qualified Technical Investigator (QTI), or Chief Investigator.

4.3 Delegation of Authority

In the case of a Coordinated Response Protocol (CRP), the CRP Response Leader will be given delegation of authority from the agency DASHO or Responsible Agency Official. If the Learning Review occurs outside of the CRP process, the Learning Review Team Leader will be delegated authority from the requesting Agency Administrator.

This Delegation of Authority is the Response Leader’s authority to conduct all the required reviews and investigations and to request additional resources as needed.

Due to the complexities inherent in interagency reviews, some key areas may require upfront discussions. These should be determined and identified in the Delegation of Authority and may include the following:

- Identify Office of Record (for retaining the final case file and processing Freedom of Information Act [FOIA] requests).
- Learning Review Boards (LRBs); identify single agency or joint interagency LRBs as applicable.

4.4 Team Selections and Activation

For Interagency Investigations, team membership will be negotiated by the agencies that are part of the Delegation of Authority. Team member mobilization will be coordinated within the respective agency process.
4.4.1 Initial Team Briefing

The Learning Review Team Leader will conduct the initial team briefing. It serves as the basis for the team to understand how the review phases will be conducted and the participants’ roles and responsibilities.

Topics should include the following:

- Delegation of Authority
- Team introductions
- Team member roles and responsibilities
- Methodology – phased approach
- Team performance and conduct
- Standards for confidentiality
- Information collection and distribution protocols
- Other teams involved in the incident
- Team assignments
- Team safety, health, and wellness
- Team logistics
- Time charging guidelines

4.4.2 In-Briefing with Agency Administrator

Caution: It is human nature to begin to draw immediate conclusions about incidents. However, this can introduce bias at an early stage. The sponsoring unit should avoid providing too much direction, such as asking the Learning Review Team to answer specific questions about the event. If the sponsoring unit has specific goals they feel are essential to the review, they should only be shared with the Response Leader or Learning Review Team Leader.

When the Learning Review team arrives at the field unit, there must be a transition briefing between the local Agency Administrator/Staff and the Team. A general overview of the activities that have occurred before their arrival should be provided. All records and information that have been gathered should be transferred to the team at this time. An Agency Administrator point of contact should be established. At a minimum, the Learning Review Team Leader should attend this meeting.

The briefing should include any information obtained by the local unit during the activation and implementation of their unit response plan, such as the following:

- Local coordination – obstacles, opportunities and identified hazards.
- Status of the accident site transfer to the team. For Forest Service accidents, coordinate

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7 In the case of a CRP activation, the Learning Review Team Leader will accompany the CRP Response Leader (RL) and other entities coordinated under the CRP.
8 In the case of a CRP activation, this briefing would include the Response Leader and other team leads under the CRP.
agency law enforcement as required in the Chief’s letter, “Response to Incidents and Accidents as a Coordinated Response Protocol.”

- Location and contact information for Medical Examiner/Coroner (if applicable).
- Location, condition, and contact information for witnesses.

4.4.3 Team Management Logistics

Preplanning and acquiring the resources needed to accomplish the incident review will significantly contribute to the team’s functionality and success. Once logistical needs are identified and acquired, the decision needs to be made about who is going to manage them.

The Response Leader or Learning Review Team Leader may assign these important tasks to anyone who has the skill and time to manage them. They include but are not limited to the following:

- Lodging/meeting place for CRP Team, including private interview room(s)
- Office supplies (flip charts, markers, tape, notebooks, etc.)
- Map to and of the incident site
- Imagery of the incident site
- Accident-site escort
- Shredder
- Printer/scanner/fax machine
- Laptop computers
- Location, condition, and contact information for victims.
- Local Issues (e.g., political, land use, etc.).
- Jurisdictional issues (federal, state, and local).
- Summary of information already shared with the media and level of continuing interest.

- Computer projector
- Computer portable hard drive and flash drives
- Access to vehicles and drivers
- Conference call/speaker phone
- Personal protective equipment
- Access to TV/DVD
- Programmable portable radio
- Satellite phone (remote areas)
- GPS and GIS support
- Came
4.4.3.1 Team Meeting Location

When selecting a location for team meetings, consider the advantages and disadvantages of working out of agency offices:

**Meeting Location Considerations Table**

<table>
<thead>
<tr>
<th>Pros of utilizing agency headquarters</th>
<th>Cons of utilizing agency headquarters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment availability</td>
<td>Appearance of conflict of interest or lack of objectivity</td>
</tr>
<tr>
<td>Access to agency personnel</td>
<td>Distractions/interruptions</td>
</tr>
<tr>
<td>Building security (limited access to public)</td>
<td>Greater opportunity for agency personnel to overhear interviewers/discussions</td>
</tr>
<tr>
<td></td>
<td>Reduced personnel and physical security</td>
</tr>
</tbody>
</table>

The Response Leader and Team Leaders should discuss the pros and cons and determine the most suitable location for each CRP part.
5. Information Collection and Synthesis (Phase 2)

The Office of Innovation and Organizational Learning will provide an experienced Process Coach who is assigned directly to the Learning Review Team to help with this process. The Process Coach will be in direct contact with the Learning Review Team Leader and may or may not be on-scene.

5.1 Objectives

Phase 2 objectives:

- Create a complex narrative that recounts the perspectives of those involved that allows for diverse, even conflicting, accounts to be captured.

The team should avoid trying to resolve differing accounts into a single story, as this represents a significant change and can be a gateway for the team to introduce its own bias into the narrative. Making a concerted effort to include these differences in the narrative can help to highlight interactions and interconnections that may have shaped the outcome and are therefore very important to capture.

- Create a network of influences map (a visual representation of the conditions that influenced decisions and actions).

The team will gather information to facilitate analysis and sensemaking, determine key decisions and actions, and place them in context by identifying performance influencing factors and associating them with each decision/action. During this phase, the team should avoid problem solution, generalization, and drawing conclusions. It is also not necessary to determine the difference between a decision and an action at this point in the process. The intent is to build a history of relevant information that may have influenced the participants.

- Negotiate a timeline for delivery of products to support the Learning Review Board.

The Response Leader will work with the Director of Occupational Safety and Health to determine a delivery schedule for products needed to schedule and conduct the Learning Review Board.

5.2 Accounting for Bias

Information provides the basis for all aspects of the Learning Review. It is critically important at this stage to avoid bias as much as possible. Bias can result in significant changes to the way data is converted to information and is then used or interpreted.
Once people know the outcome of an event, it is impossible to be without bias\textsuperscript{9}. For this reason it is important to avoid developing or forming conclusions too early. It is crucial that Phase 2 be devoted to information collection and event mapping, as long as practical.

### 5.3 Information Types

There are two basic types of information, objective and subjective. Grouping information in terms of these two types can be useful throughout the review process.

‘Information’ is hard to define because it is many things. Perhaps the easiest way to think of it is somewhere between data and knowledge. In the Information Science and Knowledge Management fields, raw data becomes information when it has been interpreted or put into a context.

\textit{~Karl Weick}

\textbf{Note}: By this definition, all information has been changed from its raw state to knowledge and is thus subjective. Subjective information cannot be shared outside the Learning Review Team.

#### 5.3.1 Definition of Objective and Subjective Information

Objective information is completely unbiased. It is not touched by the speaker’s previous experiences or tastes. It is verifiable by looking up facts or performing mathematical calculations. If you think about this, objective statements are nearly impossible to create, and objective information is limited.

Subjective information has been colored by the character of the speaker or writer. It often has a basis in reality but reflects the perspective through which the speaker views reality. Each person will have his/her own experience of an event that differs from those of others at the event. Each perspective should be captured in the Learning Review narrative.

The creation of a “factual” report based on individual perspectives is a sleight of hand that converts subjective interpretations into objective “fact” or reality. This has the potential to be very damaging as this conversion or translation can result in a degradation of the quality and objectivity of the report. Reports should reflect the complex nature of the environment rather than focus on an account of the event that is crafted to tell a single story from a single perspective. For this reason, it is imperative to seek and present multiple perspectives in the narrative; these perspectives will often not agree, and that is to be expected. Information that is objective or objectively determined can and should be used to support the narrative.

**Objective and Subjective Data Table**

<table>
<thead>
<tr>
<th>Objective Data</th>
<th>Subjective Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is directly observable: Able to be seen, heard, touched, smelled, tasted,</td>
<td>Is opinion, judgment, assumption, belief, rumor, conjecture, suspicion,</td>
</tr>
<tr>
<td>counted, or measured (does not contain conjecture, conclusion, or opinion).</td>
<td>conclusion, and individual statements (difficult, or impossible to verify).</td>
</tr>
</tbody>
</table>

For example, “It rained that day” (objective) vs. “the rain made it difficult to see the hand signals from the boss” (subjective).

### 5.4 Building Context

The problem with the future is that more things can happen than will happen. ~ Plato’s reflections on uncertainty

#### 5.4.1 Developing an Understanding of Human Decisions/Actions in Context

As Karl Weick says, “Give back to the past; it's present when there were more options, more uncertainty, than were seen in hindsight.”

##### 5.4.1.1 A Technique to Reduce Initial Biases

- Have people write down their hunches; then seal them in an envelope and pull them out and re-read them LATE in the narrative construction. This may alert the team to biases that may have been present from the beginning.

### 5.5 Getting Started

The severity (consequence) of the event is often used to determine the type and size of a Learning Review Team\(^\text{10}\) needed. Severity, however, is not the whole story and can mislead us as to the effort needed to make sense of an event and hinder our ability to develop meaningful mitigations.

Near-miss, no-consequence, and successful outcome events can be highly complex and can provide meaningful information for organizational and individual learning.

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\(^\text{10}\) The Learning Review Team is described in the Team Assignment section of this guide.
A standard “Learning Review Team” configuration is described in the CRP guide. Team size and constituency is scalable, based on the complexity of the incident, much like the Incident Command System on which it is based.

### 5.6 Gathering Information and Building a Narrative

Techniques for understanding complex systems often start with initial information collection to establish connections around principal participants, actions, or other information. The network of influences map allows the team to build a basic image of the information, which will ultimately determine learning opportunities and directions for further study. The basic structure or framework for a network of influences map can follow any number of themes. Information can be arranged around individuals, decisions or actions, major events, or timelines, to name a few.

**Caution:** Normally, upon initial notification we have only basic information about the event. Every analysis phase from this point forward has inherent risk of bias. Effort should be taken to avoid bias as much as possible. The initial information may be incorrect and can bias the Learning Review Team (Phase 2) sent to gather information. At this stage, posing specific questions to the team can introduce bias and have a detrimental effect on the product of their work. The **Learning Review Team** focus should be on gathering information to create a rich narrative, which represents the complex nature of the event.

There is no single recipe to tell the team how to organize the information they collect, as each incident is unique and may favor one arrangement over another, each of which has its own set of inherent risks of bias.

#### 5.6.1 Start with Simple Questions and Avoid Assumptions

What are the stories? Ask participants in the event to tell you what happened from their perspectives (this can be done as a single interview or in group interviews). Listen and make note of the events as participant Learning Review Team members.

**Caution:** Cognitive science tells us that all people construct memories by combining shards of what actually happened with a representation of what happened as it was filtered through their own mental models and experiences. We cannot change the fact that recollection is a construction of reality and does not play back like a video recording.

In *Pieces of Light*, Charles Fernyhough describes it this way, “Despite what we wish to believe, reality is only one part of our memories. Beliefs, stories, and new knowledge can all influence how the raw materials of the past pieces of light come together when we remember. Memory evolved to help us make decisions about the future; it never has to be loyal to the details of the past in order to be helpful.”
5.6.2 Talk about Stories

The value of observer narratives is to give the team enough information to begin to understand the event and the conditions that supported decisions and actions. As you listen to them tell their stories, prepare to brief the rest of the team about the information gathered during the interviews. Capture the key elements of the interviews. Have each team member contribute to the collection of information by listening to the interview and then adding to or challenging the information.

Some things to consider when in information collection mode include but are not limited to worker’s goals, his or her knowledge or perception of the environment, what the worker did not know, and his or her focus of attention. Most people have goals; some are overt while others may be hidden.

“Task completion” is one obvious goal for workers, but there are often other conflicting goals, such as economic considerations, subtle coercions (e.g., what the boss/system states as goals as opposed to what workers are actually rewarded for doing), or the available time for the task failing to correspond with the type or scope of work expected of the individual.

Another influence to consider is what the participants may have learned from previous successes and what mental models or expectations they brought into the event. People may have knowledge, but its application is not straightforward. Knowledge is always incomplete, and there are questions about biases, accuracy, and availability of knowledge depending upon conditions. Goals and knowledge, together, determine the focus of attention. Workers cannot know and see everything all the time.

What they are trying to accomplish and what they perceive to be important at the time can drive where they direct their attention. No one is an omniscient observer about everything in the environment. Understanding what conditions they perceived (noticed) will help you to reconstruct what their focus of attention was at the time.

Cognitive and human factor research has shown that attention is a limited resource. Our conscious attention focuses on a relatively small subset of the sensory input bombarding our senses at every moment...the accusation that someone failed to pay attention can never literally be correct. People are always paying attention to something.” ~Marc Green, The Six Laws of Attention.
5.7 Creation of the Network of Influences Map

5.7.1 Recognize and Identify Key Decisions/Actions

At this point do not get bogged down in trying to determine if an action was intuitive or the result of a deliberate decision. Instead, simply list what the Learning Review Team feels are key decisions/actions. Then begin to create a map that places these in context by considering the conditions supported the decision/action. These can and likely will capture “hard truths” necessary for organizational and individual learning.

Some key conditions or Performance Influencing Factors to consider include the following:

- What was happening in the work environment?
- What were the workers trying to accomplish and why?
- What did they know to be true at the time?
- Where was their attention focused and why?
- What was the incentive structure (for what were they rewarded and by whom)?
- What were the previous 48 hours like for the individual(s) involved? (You may want to go back even further depending on what you find).
This exercise will help the Learning Review Team understand why actions and decisions made sense to the participants who were acting with limited information at the time. We should be reminded that we are always acting with limited information.

The network of influences map will graphically tie the relevant work to the context that surrounded actions and decisions. Human actions/decisions should be linked to the conditions that influenced them. This does not need to follow a timeline—often people operate event-to-event, rather than minute-to-minute. Timelines without context can often adversely influence the narrative. Time is often perceived differently by those involved in the incident. Saying that something happened in a short or long period of time is meaningless without developing an understanding of those things that may have influenced how that period of time was perceived, such as workload, task saturation, and fatigue. However, if a timeline helps to relay the story, by all means use one.

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**Figure 5: Example of a Network of Influences Map**
Caution: Learning Review Teams can artificially impose or create structure. This situation is usually not intentional and emerges as the team tries to make sense to meet their mental models. It is the equivalent of altering the facts to support a singular view.

Unlike a movie or a novel, incidents will not have a beginning, middle, and an end. Decisions may make sense at the moment but are always made without the benefit of knowing the outcome. People act based on a myriad of inputs that they make sense of in the moment. Think of it this way: If they had known the action would result in a negative outcome, they likely would have done something different.

5.8 Sharing Information Learned during Interviews with the Team

Sharing information with the team members can be done using the technique mentioned below or any other way.

There are two types of knowledge: Knowledge by acquaintance (first-hand, hands-on information) and knowledge by description (making first-hand knowledge more public).

“Unless an interviewer has their own vocabulary AND team members have the same, then there is a big loss between acquaintance and description” ~Karl Weick, Managing the Unexpected).

At a minimum, when an interviewer describes his observations to the team, team members should read back what they heard so that interviewer can at least calibrate his/her understanding toward greater accuracy. This will be followed by a review of the narrative by the incident-involved employees who contributed to the narrative.

5.9 Site Mapping

(See Appendix 5, “Team Considerations for Accident Scene Evaluation.”)

The Learning Review Team Leader will evaluate the need for technical specialists, such as cartographers, photographers, and manufacturer’s equipment specialists, in order to facilitate reconstruction or mechanical evaluation. The Team Leader should develop a plan for data collection prior to departure to the site. This plan should assign specific duties to members of the team so that critical data can be collected with minimum exposure to the team members.
Basic tools that may be used for documenting the accident site include the following:

- Sketches
- Drawings
- Diagrams
- Measurement and Mapping
- Global Positioning System
  - Engineering (Generally, this requires a technical specialist)
  - Navigational (Applicable to most basic mapping and may not require a technical specialist)
- 360 Site Photography
- Videography

### 5.10 Physical Data Preservation and Collection

Consider the collection of any other reports related to or about the event. These may provide technical or recorded information useful for Phase 3.

The Learning Review Team will determine what physical material is fragile or perishable and make every effort to preserve that material. Weather, excessive handling, theft, or movement, etc. can destroy or damage physical material. Protection may require additional site security, expansion of the site security perimeter, covering the site (or parts of the site), or movement of material to a secured facility. Once carefully collected and catalogued, this material can be available should reconstruction be necessary.

The Learning Review Team and Response Leader will determine how to treat physical materials. However, remember that much of this type of collection requires special techniques or experience. When in doubt, bring in, or at least consult with, a specialist. The following is a short list of considerations:

- Physical material that needs to be gathered (and the order of that collection, if necessary).
- Procedures for collecting physical material, including the need for an inventory or catalog of location.
  - Who will gather the physical material?
  - Where should the material be stored and secured?
  - Who is responsible for chain-of-custody concerns?

Consider the following precautions when collecting material that may be contaminated with chemical or biological hazards (e.g., blood borne pathogens, composite materials, munitions, or hazardous chemicals):
• Team members and technical specialists dealing with hazardous substances must follow universal precautions and their agency protocols. If there is a question, specialists should be consulted.
• Personal protective equipment (PPE) will be used as identified in the job hazard analysis/risk assessment (JHA/RA), material safety data sheets (MSDS), or specialist recommendations.

Any clothing recovered with body fluids, which will be analyzed, may require special handling. This should be done by a qualified professional or guided by one. Consult the lab that will conduct the analysis for handling, packaging, and transportation instructions.

For wildland fire PPE and clothing analysis, add a Missoula Technology and Development Center (MTDC) specialist to the Learning Review Team. If none is available, confer with an MTDC specialist and refer to MTDC protocols and guidance.

Objective information, such as components, parts, and even entire pieces of equipment, may need to be catalogued at the scene. There are a number of methods to do this. Law Enforcement Officers are trained to gather this information; consider allowing them to do so.

If further analysis is required or the components may be needed for the reconstruction of the event, store them in a secure location.

The Learning Review Team Leader is responsible for establishing logs for all tangible information collected during the review. It is imperative that this material be cataloged and accessible to the LR Team.

The originals or copies of important documents should be placed in the investigation case file.

**Note:** Objective physical or tangible material gathered during the review may be utilized in other official proceedings and must be collected and processed correctly. The Learning Review Team is the custodian of that material until it is sent to the official office as part of the case file.

The Coordinated Response Protocol and the Learning Review Team is the temporary custodian for all physical material gathered during the review. This material shall be protected in locked area and not returned to other entities (including family members of victims) until the following takes place:

• The investigation is complete.
• The Response Leader and the Agency Administrator have determined which items may be released or disposed.
Any deviation from this process should be requested to the DASHO, Agency Administrator, or IOL.

5.11 Crew Incident History and Qualifications

Every effort should be made to build an understanding of the history of those involved in the incident. It is not unusual for this history to go back a week to 10 days prior to the incident. However, it may be relevant to go back even further if it enhances the understanding of the event. At a minimum, the crew rest history and qualifications should be reviewed, as well as any major personal or professional events that may have influenced the participants. The IOL Process Coach can help determine a stop rule for each incident.

The following list includes but should not be limited to the following:

- Radio logs (written and recorded)
- Dispatch logs
- Maps
- Job hazard analyses
- Safety briefings
- Team briefings
- Employee training records
- Medical examination records
- Work capacity test results
- Qualifications/certifications (including red cards)
- Federal driver’s license
- Work/rest (timesheets) for at least two pay periods
- Recent fire assignments
- Equipment maintenance records
- Equipment performance tests
- Inspection documents
- Fire management plan
- RAWS (remote automated weather system information)
- Weather (forecast/conditions)
- Fire behavior
- Incident action plans/personnel lists
- Delegation of authority
- Memorandum of understanding (MOUs)/agreements
- Specifications/drawings
- Press releases
- Autopsy/toxicology report
- 911 Log
5.12 Human Machine Interface Data Collection (Ergonomics)

This topic deals mainly with the field of ergonomics, which is a very intensive field of study that examines the efficiency of people in their working environment. This topic will likely require expert consultation. The Office of Innovation and Organizational Learning maintains a list of subject-matter experts who can help with this area of specialization.

5.13 Developing the Complex Narrative

It is useless to focus a Learning Review on the judgment of the individual actions or decisions as right or wrong, bad or good. Instead, the focus should be on why the decision/action made sense to those involved at the time. This will place the decisions/actions in the context in which they transpired.

The Learning Review attempts to understand “why” an event occurred and avoids labeling human action as good or bad. During the development of the narrative, try to avoid descriptions that rely on the presence of some knowledge that the person did not have. Instead, focus on the presence of factors that may have influenced the participants in any way. Understanding the interactions between these factors is often a critical part of Phase 3, so the greater the detail, the better the possibility of understanding the event.

Focus on the actions as they appeared to the people inside the situation (e.g., the aircraft maintenance engineer checked out and returned the closed toolbox, complying with the tool-control procedure, but was unaware that the tool was still in the aircraft). This allows us to begin to understand the “why” behind the action(s)/decision(s) in the next phase.

The complex narrative should strive to enable its readers to “walk in the shoes” of the accident’s key players. At a minimum, the story should show how the decisions of these employees made sense within their social and cultural context based on information known to them at the time.

It is inevitable in any complex event that the people involved in the accident will have different perspectives and memories of what happened and how and why. Multiple stories are acceptable and this has been used in FLAs to resolve irreconcilable differences in recollections or to illuminate important differences in perspectives.

Just as in an FLA, the narrative presents the accident as it was seen, felt, and understood by those involved. To the extent possible, the narrative should not be written from an outsider’s perspective. Rather, it is written from the point-of-view of the people
most directly involved in the accident. The story is not written to persuade but rather to reveal to readers what those involved perceived in the moment. These are often perceptions of conditions and reflect what people believed was happening.

Conditions perceived by those involved can significantly influence decisions and actions. For this reason detailed presentation of the conditions as they were perceived by those involved is very important to capture in the narrative.

5.14 Conflicting Reports or Perspectives

The difference between truth and fiction is that fiction has to make sense.
~Tom Clancy

The narrative should include multiple perspectives of those who were involved. These perspectives are important to capture, as they represent differences in perception that may indicate systemic issues, concerns, or opportunities. Multiple perspectives should be captured and portrayed as close to the recollection of the participants as possible; however, remember that these are already filtered by the individuals through their bias, mental models, and rationalization.

It is important to realize that Learning Review Team members are NOT objective observers of reality. The team is also making sense of the event from its perspectives and based its biases and heuristics. By virtue of positions on the team, members are given power to make decisions about what is included and excluded from a narrative, which can substantively change the “story” and is a function of power, not truth.¹¹

Do not change their perception, which would make it the Learning Review Team’s story, not the participants. They may not agree and there may be large differences in the perspectives. This is important to capture, as each perception could be viewed as a performance shaping factor.

The narrative should not change the perceptions by averaging or adjusting them to meet conclusions drawn by the Learning Review Team. This would be the team making sense of the event from its perspective, which could significantly change the stories. It is far more important to understand how the event was perceived by those involved and why the actions/decisions made sense to them at the time they were made. Capture the “view from inside the tunnel” (Dekker, 2006).

The recollection of the individual should be captured, especially if it conflicts with “known data.” This is their perception and may be an indicator of their state of mind or the perceptions that affected their decisions. Ultimately, this may become an indicator of deeper systemic factors, some of which may be addressed in Phase 3.

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5.15 Review Process – Involving Participants in the Narrative

It is important to provide the DRAFT narrative to those who were involved in the event and get their input regarding its completeness and how it reflects what they believe. Use their input to modify the narrative to ensure it is as close as possible to their recollections.

The narrative is the basis of the lessons available for learning. Its completeness, including conflicts and its ability to capture adaptations, interactions, and interconnections (normal variability or normal diversity) will allow the Sensemaking Phase to create the best possible products for both organizational and individual learning.

Finally, remember that the team is basically attempting to create a model or representation of a complex system interaction (e.g., an event); it will not get everything exactly “right.” Representing the participant’s stories as completely as possible and allow them to review the narrative will ensure the best job possible.

Consider a completed narrative to have a similar content and feel as a thorough “staff ride,” where the conflicts and perspectives of those involved are each represented in the context of the environment where they took place. Staff rides have value years after the event, especially when those closest to the incident present the story.

5.16 Event Reconstruction (Often used in aviation accidents/incidents)

Include recommendations for the type and structure of the reconstruction.

A reconstruction can be a digital animation, digital video, video audio, multi-media, or any audio or visual representation (e.g., map and voice recording) of the event. It should represent the event with as much accuracy as possible in order to clarify or support the narrative. It should not represent the conclusions of the Learning Review Team; rather, it should represent the information the team has gathered with regard to the incident.

The Office of Innovation and Organizational Learning will maintain a list of video recreation, digital video, modern media, and audio-visual re-creation specialists.

5.17 Key Participant History

Participant history provides background information regarding relevant events and information in the key participants’ past. This should be explored in enough detail to assist the Learning Review Team in understanding issues like fatigue and distraction, as well as a summary of participants’ qualifications. This section is designed to develop background information regarding what key individuals involved in the incident had been doing during the previous week to 14 days. This timeframe is a minimum. If the team
determines more information may be relevant to the incident, then that should be pursued.

5.18 Evidence/Information Sharing with Collateral Investigations

As stated earlier in this guide, most likely collateral investigations will be occurring during a Coordinated Response Protocol. While full cooperation and coordination is imperative with these investigations, protocols need to be followed for information sharing; the team needs to protect the integrity of the Learning Review. Information may be seen very differently by collateral investigations, many of which view it as “evidence.” Evidence is defined as, “the available body of facts or information indicating whether a belief or proposition is true or valid.” The Learning Review process will focus on information; however, some tangible information can be shared as long as the team recognizes that it may be converted into evidence.

5.18.1 Evidence/Information that Can Be Shared

Only COPIES of objective information can be shared. Items that might indicate conclusions or opinions of the team should not be included. Objective information would include things such as training records, crew history, maintenance records, and time sheets (if allowed by organizational regulations). The following examples represent documents that are available under the Freedom of Information Act (FOIA) or that are part of official records.

- Copies of objective photos; audio or video recordings; maps; operator or participant logs created before or during the mission; and training records may be shared.
- DO NOT include investigator notes or other markings that might indicate team conclusions or thoughts.
- Do not provide originals. If not possible, then keep copies.
- Physical materials should be checked out and tracked in a log created by the team Documentation Specialist. The materials should be returned to the Learning Review case file. Legal action may make the return of this material impossible until the case has been dismissed or adjudicated, in which case copies should be kept in the Learning Review File.
- In the case of federal OSHA, offer only a copy of the witness list that was provided by the local unit to the team upon arrival. This is consistent with Federal OSHA’s Field Operations Manual, Directive Number CPL02-00-1098, Chapter 3.I(5).
5.18.2 Evidence/Information that Cannot Be Shared

- Any subjective information, including field notes or notes regarding team deliberations, thoughts, or speculation. Collateral investigators must gather their own statements and conduct independent interviews.
- Photographs with notes, descriptions, reenactments, event reconstructions, or timelines if developed from personal accounts.
- Release of personal medical information has to be negotiated between agency human resource channels.

The Law Enforcement Team Leader, local unit point of contact, or employee’s home unit can help other agencies with making witnesses available upon the request of the collateral investigation team leader.

The Response Leader should assign the Law Enforcement Team Leader or his/her designee as a liaison to work with all collateral investigations. The Learning Review Team will not coordinate directly with any collateral investigation. The CRP Safety Representative is generally the best liaison for OSHA.

A member of the Learning Review Team shall NOT accompany collateral investigators to the incident/accident site. A member of the CRP may be assigned if requested by the collateral investigation (normally the Law Enforcement Team Leader or designee).

Should issues arise with collateral investigations, the Response Leader will coordinate with IOL, the OSOH Director, and the DASHO to create a mitigation strategy or plan.

5.19 Criminal Activity

If at any time there is a question regarding criminal activity, the Law Enforcement Team Leader should be notified. The Law Enforcement Team Leader will consider the information and consult with the Response Leader. If they determine there is reason to initiate a Law Enforcement Investigation, the DASHO, OSOH Director, and LEI Director will consult. The DASHO will direct the path forward.

The list of potential witnesses provided to the CRP by the local unit will be provided to the Law Enforcement Officer assigned to do the investigation. No list of those persons interviewed by the team will be provided, as this list may be the result of deliberations of the team and is therefore subjective. Only information considered to be objective will be passed to Law Enforcement investigators.
6. Analysis and Sensemaking (Phase 3)

6.1 Objective

Phase 3 objectives:

- To make sense of the context surrounding the key decisions and actions identified in Phase 2 in the context of Forest Service work systems.
- To provide ways for the leaders and field to make sense and learn from what happened.
- To complete the analysis of mechanical aspects of the event and correlate them with the human contributions identified in the Sensemaking portion of the review.

Just as there is uncertainty in complex systems, there will be uncertainty in a Learning Review. The Sensemaking team needs to be comfortable with uncertainty and realize that understanding will emerge from reflection on the data/information.

6.2 Determining Needs (or Determining the Process)

The separation of the Data Collection Phase from the Analysis and Sensemaking Phase allows those involved to select the strategy that best fits the information obtained. The shift between information gathering and Analysis and Sensemaking should be a collaborative decision between the Learning Review Team Lead, Response Leader, Co-Lead, and the Sensemaking Team Coach.

Choosing between Analysis and Sensemaking is determined by the type of system being reviewed. Some data deserves direct analysis; for example, if a failed mechanical component is found, such as an aircraft engine, the team may send the component to the manufacturer for a teardown analysis. Simple and complicated systems would drive the use of analysis in Phase 3.

Where human factors or complex systems are involved, the Sensemaking process will be required. Within a given accident, the team may need to use both Analysis and Sensemaking.

Moving into Analysis and Sensemaking too quickly may introduce bias into the process. It is strongly advised to provide detail in the narrative and context around the decisions/actions before drawing connections and conclusions. It is important to avoid resolving the different perceptions into a single story that may make sense to the team. This action changes the story to a fictional account and limits the ability to understand the role of conflicting perceptions and understanding of the situation being reviewed.
6.3 Analysis

For the purpose of this guide, “analysis” is applicable only to objective information and is conducted to assess mechanical, ergonomic, and structural failures. It follows an engineering-based model, which is dedicated to problem-solving using quantitative data. This process is based on empirical or objective data; is applicable to simple and complicated systems; and will result in specific answers or solutions to the problems discovered during the Information Collection Phase (Phase 2).

Analysis usually results in the creation of additional barriers. Barriers may either be tangible (physical or mechanical) or intangible (rules, regulations, policies, and procedures). Barrier development is often associated with the probability of an event occurring and the potential consequence (or severity) of that event. Barriers serve two functions: to prevent the incident from occurring or to mitigate the results once the event has occurred. As an example, a seatbelt cannot prevent an accident; however, it can lessen the severity of the outcome. Barriers can also make systems and work more complicated, so their development and introduction should be vetted through those closest to the work that they will affect.

Analysis will often result in recommendations that are directly tied to the incident and prevention of similar occurrences in the future.

**Caution:** The Forest Service has a long history of creating barriers. Often the barriers have come about through recommendations after accidents. Many of these barriers have not been particularly effective for reducing future accidents, especially as they relate to human factors (complex systems). Barriers often have created additional, unintended outcomes in the system. Examples of such barriers are checklists, regulations, policies, and procedures, many of which only apply to the accident that just happened and have little or no relevance to future operations.

Barriers have been shown to be effective in simple and complicated systems. Therefore, barriers may be appropriate in cases where analysis can successfully provide answers to problems. Complex systems are non-linear by definition, and barriers have proven to be less effective in social (complex) situations. The Learning Review process is predicated on the assumption that sensemaking and identification of influences within the system will be a much more effective means of improving accident rates.

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12 Ergonomics is the practice of designing products, systems, or processes to take proper account of the interaction between them and the people who use them.
6.4 Sensemaking

Sensemaking advocates that we try to avoid judging human performance as “right or wrong.” Actions in hindsight may appear to be violations or errors. However, “in complex situations, people must act based on uncertain, incomplete, and sometimes even contradictory information.” It is the job of the Sensemaking team to make visible the interactions, conditions, and circumstances that shaped a person’s assessments and actions.

6.4.1 The Sensemaking Process

The following sections provide a general guide to the Sensemaking process. However, it should be noted that this is not intended to be the only way that Sensemaking can be conducted. It is merely an attempt to provide Sensemaking teams with a jumping off point. Ultimately, the data should drive the process and Sensemaking teams should adjust/develop the Sensemaking process to meet the needs of the incident.

6.5 Building the Phase 3 Team

The Phase 3 (Analysis and Sensemaking) team should be composed of members of the Phase 2 (Learning Review) team and IOL staff members, who will act as process coaches. The Learning Review Team Leader and the IOL Process Coach will collectively determine the size and make-up of the Phase 3 team based on the complexity of the incident being reviewed.

The Learning Review Team Leader should view the IOL Process Coach as an asset. The coach can help with a variety of tasks including but not limited to the following: organizing the academic review, establishing and facilitating focus groups, reviewing documents, compiling focus group information, writing sections of documents; and generally providing guidance and suggestions about the Sensemaking or Learning Review process.

The Phase 3 Team will rely on focus group sessions to make sense of what was learned in Phase 2. In the past we relied on investigation team members to draw conclusions based on the information they acquired during the investigation. This approach did not recognize the limitations of such a small team. The Learning Review acknowledges the limitations of small teams and understands the value of including multiple perspectives. This shares the load of learning from the event by including expertise that would otherwise go untapped. Focus groups are a recognized way of including new ideas, viewpoints, and knowledge from sources outside the team.

Specific members of the Data Collection Team will be augmented during this phase with a Sensemaking Team Leader and Subject-Matter Experts (SMEs), as

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13 Dekker, S (2014). *The field guide to understanding human error.* Ashgate: Burlington, VT.
needed. All recommendations developed during this phase will be vetted through the community of practice (normally though focus groups).

For a specific example of how to build a Sensemaking Team and to conduct focus groups, see Appendix 14, Tips and Techniques.

### 6.6 Preparing to Hold the First Focus Group

Review the narrative and the Network of Influences map as a team. Determine what type of subject-matter experts (SMEs) and academic specialists might be useful in the Sensemaking process. Note: academic specialists are not always required.

Commonly SMEs are people who are very familiar with the kind of work that was being done leading up to the incident.

There is no recipe that applies to all incidents. Multiple focus groups may be required based on the complexity of the incident and what is learned from each focus group. For example, initial SMEs may indicate the need for a focus group that represents organizational leadership, senior fire leaders, or technical specialists (e.g., Fire Behavior Analysts, Incident Meteorologists, Forest Staff Specialist, Information Technology Specialists, Fire Ecologists). Each focus group provides additional perspectives and information about the system of work. This phase of the review concentrates on understanding the applicability of conditions to the actual (real) world of Forest Service operations.

Delving into the real-world pressures, rewards, and cultural influences may seem to distract reviewers from the actual incident; however, by design, the process allows the actions and decisions made during the event to be placed in the context of the Forest Service work system. Recommendations will therefore become relevant to the entire work system rather than limited to accident-specific conditions, which may never occur again.

### 6.6.1 Focus Groups

**Initial synthesis**: Dialogue can be used to determine how the key decision and action points are interconnected and interrelated. This may result in the identification of additional areas of inquiry, a task that is normally assigned to the Learning Review Team. The recognition of adaptive responses or innovations and human limitations will help to identify the type of additional synthesis that will be needed; a process that is normally conducted through focus groups.
6.7 Academic Review

The external subject-matter experts will guide the development of a more complete image of what occurred. Just as a traditional investigation will order metallurgical tests on a failed mechanism, the Learning Review Team can request that any of these products be prepared by an outside source to support the Learning Review. Academic specialists can add yet another lens or perspective that will enhance the ability to be self-reflective as an organization and thereby learn from the event.

With the extended picture generated by the detailed narrative that was developed during Phase 2 and initial synthesis, an enhanced network of influences map will emerge that shows the relationships between people and their work environment (e.g., conditions and constraints present and people’s reactions). Providing this information to the academics selected by the Phase 3 Team will provide a more neutral (outside) view of Forest Service operations.

6.8 Relationship among IOL, Learning Review Team Leader, and CRP Response Leader

The CRP Response Leader has authority delegated from the Chief of the Forest Service to conduct the Learning Review. He or she will approve all financial obligations and commitments, including rental space for the team to work (if needed), any supplies purchased to support the review, and approval for hiring outside technical specialists (such as academics). The Response Leader will also have direct oversight of the Learning Review Team Leader and final approval of material presented to the Learning Review Board.

The Learning Review Team Leader works under the direction of the Response Leader in conducting the Learning Review and producing learning products designed to aid in preventing future accidents. While the Response Leader is responsible for coordinating the Law Enforcement and Investigations (LEI) and Critical Incident Stress Management (CISM) arms of the CRP process, historically CRP Response Leaders has focused the majority of their attention on the Learning Review Team. No two assignments are the same, so in each case the Response Leader and the Learning Review Team Leader need to work together closely to establish norms and protocols for each particular incident.

The Office of Innovation and Organizational Learning has been tasked with the upkeep and maintenance of the Learning Review process (including updating this guide). As a result, this office will likely gain a large body of experience in conducting Learning Reviews, including lessons learned from conducting other reviews, experience facilitating and organizing focus groups, access to various academic specialists in relevant fields, and a thorough understanding of the research upon which the Learning Review process is based.
7. Reports and Products (Phase 3, continued)

7.1 Objectives

- Describe the development and types of products required to meet the goals of the Learning Review process.
- Describe the process of vetting recommendations through the groups who will be affected by the imposition, creation, or implementation of recommendations.
- Describe the type of resources available to the Analysis and Sensemaking Team as they create or guide the creation of products to meet learning needs.

7.2 Reports and Products – General

The purpose of this chapter is to provide standards and guidance for reports and products, including some alternative formats that could promote individual and organizational learning. The medium for presentation of information should be carefully selected to ensure that it is most compatible with the expected audience.

The goal of the process is Accident Prevention through Learning! The IOL Team works closely with subject-matter experts (as needed) and the Learning Review Team members to determine the key learning objectives that emerged during the Information Collection and Sensemaking phases. Learning objectives should be clearly identified and addressed for each specific audience (e.g., individuals within the organization, leadership, communities of practice, outside agencies, and/or stakeholders).

7.2.1 72-Hour Expanded Report

This is the first product the Learning Review Team creates. The Learning Review Team Leader prepares it, and the Response Leader signs it 72 hours after the team’s arrival or when new information becomes available that contradicts or supplements the 24-Hour Report. The Response Leader sends the report to the delegating official (normally the DASHO) for approval and release. For fire-related responses, the Fire and Aviation Management Fire Operations and Risk Management Officer will post the 72-Hour Report on the Wildland Fire Lessons Learned Center Web site after the Designated Agency Safety and Health Official’s (DASHO) approval.

Reports shall be prepared in accordance with the following:

- Prepare the report using the format in Appendix 13, 72-Hour Expanded Report.
- Coordinate with the Delegating Official(s) or their designee to establish content prior to final approval. Once the form has been approved by both the Response

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14 Go to http://www.wildfirelessons.net/home.
Leader and the Delegating Official(s), the Delegating Official or their designee shall release the report per agency specific direction.

This report provides more detail about the accident and normally includes the following:

- Number of victims.
- Names of fatality victim(s) (if next of kin has been notified). **Do not release names of injured victims.**
- Severity of injuries or property damage.
- Synopsis of known facts.

Optional: “Related Safety Review Topics for Field Use” – This section may contain additional items that the CRP Response Leader believes are pertinent to operations related to the accident for immediate field use. Review by appropriate safety council (or representative) prior to release.

### 7.2.2 Safety Alert

A Safety Alert can be submitted at any time during the CRP or Learning Review process. A Safety Alert is prepared when any team has identified a safety issue that poses an imminent threat to life or property. Examples include a failure of a piece of equipment, a policy or procedural misinterpretation, or environmental conditions that could lead to an accident at another location if not addressed quickly.

Any Team Leader can prepare a draft Safety Alert, which identifies the hazards and recommends corrective actions. The draft Safety Alert is forwarded to the head of the safety council, which oversees the specialty area. If no council has oversight, it will go directly to a recognized leader of the community of practice (this will be referred to in general as the community of practice).

### 7.2.3 Status Update/Interim Report (Optional)

Depending on the complexity of the event, an interim status report may be necessary. The status report will include the complex narrative and next steps in the review process and/or other appropriate materials.

### 7.3 Learning Review Products

This process recognizes the need for specific products intentionally designed for specific audiences who may have very different needs and ways of learning from the event. Individuals within the organization face and manage risks and hazards in real time and have less influence regarding rules, regulations, policy, and procedure than senior leaders. Senior leaders have a great deal of influence and must be prepared with information so that they can exert that influence in the most productive manner. This
necessitates the creation of at least two products—the Organizational Learning Report (for leadership) and the Field Learning Product (for field personnel).

**Learning Review Product Summary Table**

<table>
<thead>
<tr>
<th>Organizational and Field Learning Product Development</th>
<th>Organizational Learning Products will be created by the LRT. The team will create an Organizational Learning Review report designed to explore the key issues that emerged during the study and should be directed toward identifying the <strong>systemic conditions</strong> that leadership can change to reduce risk and improve the likelihood of success in the field.</th>
<th>Field Learning Products will be designed to facilitate the ability of field personnel to experience the incident through any combination of scenario-based or tabletop exercises, mockups, multimedia presentations or narratives, dialogues etc. This is designed to facilitate field learning and improved situational awareness. Here conditions become the currency for proactively improving Situational Awareness.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendations</td>
<td><strong>Recommendations</strong> will be vetted through the Response Leader, IOL and especially the communities of practice affected by the recommendations (including training personnel as appropriate). Vetting will be complete prior to submission to the Learning Review Board.</td>
<td><strong>Field Learning Products:</strong> The team will create or recommend the creation of learning product(s). These can be in any variety of formats, designed to create dialogue. These products will be created in cooperation with the community of practice most closely involved in the incident or most affected by the product(s).</td>
</tr>
</tbody>
</table>
Organizational and Field Actions and Expectations

**Organizational:** The organization will create a Safety Action Plan designed to approve and fund recommendations emerging from the LR.

**Field personnel:** Field personnel are empowered and encouraged to learn from the event and to share how they will implement what they have learned.

**Report to the Regulator (e.g., NTSB, OSHA)**

Dependent upon the nature of the incident IOL will form a team to define cause to meet regulatory requirements.

Commonly regulatory reports are part of a public docket (e.g., the NTSB accident database).

### 7.4 Organizational and Individual Learning

Safety is created both by the organization, through preparation and guidance, and by the field at the point of work. It is this partnership that should be enhanced through learning products.

Organizational and individual learning should be recognized as a legitimate “corrective action” following an event. Learning and understanding the complexity of the everyday work that was at play in the event is a part of creating safety, recognizing brittleness, and creating resilience in the workplace. For this reason, field-learning products may be the only recommendation required to meet the goal of prevention through learning.

#### 7.4.1 Organizational Learning Report

**Organizational learning** is traditionally presented as a written report directed to answer the specific needs of the organization, in terms of understanding the organizational, structural, systemic, and cultural contributors to the event. Organizational products should help leadership to understand the gap between “work as imagined” and “work as performed.”

Organizational interventions can be accomplished by changing the conditions under which people work, for example, by reconciling regulatory conflicts, developing work improvements and sharing them with wider audiences, addressing “work-arounds” that are not consistent with organizational goals or values, or by recognizing goal conflicts and resolving them where possible. Organizational interventions should avoid quick fixes or knee-jerk reactions; they should be well thought out and vetted through the community of practice before recommendations are made to the Learning Review Board.
7.4.2 Organizational Learning Objectives

The first organizational learning objective will be for management/leadership to understand the narrative of the event. The narrative also needs to help management/leadership discover the challenges workers face in their everyday duties, so that they can begin to develop a map of normal work.

The narrative should identify decisions and actions and place them in the context of the conditions that supported them. The initial premise of the Learning Review is that our personnel are well intended and did not desire an adverse outcome. For this reason leadership should focus on why the actions and decisions made sense to those involved at the time.

Additional organizational learning objectives should describe systemic weaknesses that require administrative or leadership/management-level intervention. Some of these may include both positive and negative aspects of the following:

- Understanding the differences between the organization and/or leadership’s espoused values (what we say we want) and values in practice (the perceived goals). This is often based on what the organization and leadership measure, reward, and punish.
- Value of individual performance diversity, or adaptation, and its contribution to this event. We have to understand that adaptation is necessary to meet the challenges of dynamic or complex environments. No set of guidance can fully anticipate all the potential scenarios that our workforce will face; therefore, they will have to adapt to meet the unexpected.
- How did accountability function before the event, in terms of peer, hierarchical, upward, and self-accountability?
- Structural incongruities or inconsistencies around rules, regulations, policies and procedures. For example, did the rules make sense, could they be followed, or were they in conflict with other rules, regulations, or guidance?
- Was there confusion in roles and responsibilities?
- Were there indications of practical drift (the unintentional adaptation of routine behaviors from written procedure) or cultural pressures that were inconsistent with espoused values of the organization?
- Were there structural inconsistencies around communication of decisions down through the organization, feedback up through the organization, and communication across the organization?
- Were communications clear? How did the message sent compare with the message received?
- How did the design of the system contribute to the event (e.g., tools, equipment, tasks, work load, and capacity)?
- The nature of the physical environment and how it contributed to the event (including shop/workspace design, ergonomics, weather, etc.).
7.4.3 Field Learning Product

**Individual learning** is focused on the ways that safety can be improved and created by workers at the point of work. It is critical that learning products directed toward the field present the narrative in a way that facilitates the ability of field personnel to make sense of the incident. This does not mean that the narrative should be oversimplified or presented from a single point of view. Our workers are very capable of understanding the complexities of our operations; they are immersed in operations almost every day. Complex interactions should be explored from all available perspectives, and our personnel should be encouraged to draw their own conclusions. This is the definition of Sensemaking and goes beyond simple causality.

Lessons should be emphasized emotively through dialogue, experientially through simulation, or by engaging the readers in personal reflection regarding their own experiences.

7.4.4 Individual Learning Objectives

Individuals/practitioners and the organization play a large and critical role in the creation of safety in the workplace. Historically, people have learned through story-telling as long as we have had the spoken word. What individuals learn is often an appreciation or recognition of the complex interactions as they evolved in the event and is often most easily discovered through dialogue and reflection. If patterns or common conditions are discovered, practitioners should be encouraged to reflect upon them. From novice to expert, people are able to draw conclusions and learn lessons on their own, either emotively or experientially from narratives. This is, however, best done in group dialogue (von Hippel et al., 2007).

The Phase 3 Team should not feel compelled to draw conclusions for the reader. Rather, the team should attempt to present the incident in as much detail as possible and allow the reader to make sense of what occurred. The team should not feel limited to conventional written reports; they should consider creative tools such as high-tech graphics and multimedia presentations. Modern methods of communication such as smart phones and iPads should also be considered in order to enhance learning opportunities and reach a larger audience.

7.4.5 Field Learning Objectives

This product should inspire rich dialogue by asking the reader/viewer to reflect and make sense of the event. This can be accomplished by asking questions related to the Learning Review narrative that can be addressed individually or in groups. These questions can be as simple as, “What part of this narrative can you relate to and how might this change the way you view this type of scenario?” or “What could you do (or do you do) to identify or prevent this kind of event from occurring where you work?”
Development of these questions should reflect the latest science related to adult learning.

7.5 Recommendations

Recommendations that require administrative or field action may be created as a result of a Learning Review. Some of these may be small ways to recognize how to improve work and learn on the fly while others may be systemic improvements. These recommendations should emerge during the Learning Review process and should enhance the system in terms of prevention, resilience, or corrections/revisions to existing rules, regulations, policies, or procedures. When recommendations are warranted, they will be created in conjunction with the field by engaging subject-matter experts. It is required that recommendations be circulated through representatives of the community of practice (commonly through focus groups) and IOL prior to the Learning Review Board. The result of this process should be to enhance recommendations to ensure they are reasonable and are consistent with existing research.

Recommendations will be presented to the LRB in a Safety Action Plan (SAP). The SAP will designate who is responsible for completing the recommendation(s). Those responsible for the completion of an action item listed on the SAP should be consulted prior to committing any resource to an action item or recommendation. This is designed to avoid unnecessary requests for extensions.

7.5.1 Organizational and Field Learning Product Reviews

**Process Goals Table**

<table>
<thead>
<tr>
<th>Organizational Learning Report and Recommendations</th>
<th>Field Learning Product(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The narrative should be vetted through the personnel who were key sources of information.</td>
<td></td>
</tr>
<tr>
<td>The recommendation(s) should be built in cooperation with field personnel and should be vetted through focus groups (and training personnel as applicable).</td>
<td></td>
</tr>
<tr>
<td>All learning products should be vetted through field personnel.</td>
<td></td>
</tr>
</tbody>
</table>
7.6 Freedom of Information Act Review (FOIA)

When the report is in the final draft stage, coordinate with the Director of Occupational Safety to obtain the name of the FOIA representative for the FOIA review. This should be done with enough time to allow a full FOIA review prior to the Learning Review Board (LRB). The intent is that the report delivered to the LRB will be final and releasable once approved by the LRB. The goal is to create an un-redacted report to the LRB.

7.6.1 Report to Regulator

When a causal statement is required by a regulator who has agency oversight, this causal statement will be crafted at the end of Phase 3. The following personnel will collaborate to draft any causal statements required by regulators:

- IOL Representative (commonly an experienced Learning Review Coordinator)
- Learning Review Team Leader (from the Information Collection Phase)
- OSOH Director
- Senior Executive Service (advisory member)
- Community of practice Representative (advisory member)
- Learning Review Team Members (as required)
- Technical/Research Specialist (academic or subject- matter specialist, as required)
8. Learning Review Product Evaluation and Approval (Phase 4)

8.1 Objective

Phase 4 objective:

- To describe the review process leading to approval of all learning products and ancillary Forest Service reports.

8.2 General Information

Review Process Table

<table>
<thead>
<tr>
<th>Organizational Learning Report</th>
<th>Field Learning Product(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus Groups - Community of Practice (and training personnel if applicable)</td>
<td>Internal: Leadership and Field personnel</td>
</tr>
<tr>
<td>Learning Review Board Senior Leadership</td>
<td>Public Media</td>
</tr>
<tr>
<td>Coordinated Messaging</td>
<td>Identification of Concepts that should be Included in Training Programs</td>
</tr>
<tr>
<td></td>
<td>Formal Informal</td>
</tr>
</tbody>
</table>

8.3 Initial Product Review Process

All field learning products will be reviewed by community-of-practice members and functional areas affected by the Learning Review or its recommendations. Senior leadership will give final approval of recommendations and learning products through the Learning Review Board (formerly the Accident Review Board). Interim approval may be needed or recommended for the development of certain products, this approval will be coordinated by the Response Leader, OSOH Director, and/or designated IOL Representative.

8.3.1 Coordinated Messaging

If recommendations or learning products affect a wide scope of agency personnel, a distribution plan will be developed by the OSOH and Office of Communications.
directors. Information provided to the public or media will require DASHO or Chief’s-level approval prior to release.

8.3.2 Identification of Concepts that Should Be Included in Training Programs

Recommendations that affect both formal and informal training will be reviewed by the community of practice and training personnel prior to submittal to the Learning Review Board or being listed on the SAP.

If the board recommends changes that affect the training programs, this information should be shared with training personnel prior to enacting the revised Safety Action Plan.

8.4 Purpose of the Learning Review Board

The purpose of the Learning Review Board is to approve the Organizational Report and the distribution of the learning products (Organizational Learning Product and Field Learning Product). Review boards will accomplish the following:

- Ensure employee and the organizational learning objectives are addressed by the products presented.
- Ensure that the overall report thoroughly addresses organizational accident concerns and the potential for learning from the event.
- Create products that address corrective actions to prevent future potential occurrences that emerge from analysis (e.g., technical improvements).
- Create the opportunity to best inform stakeholders of the results of the review.

8.5 Learning Review Board Membership

The Learning Review Board is typically comprised of representatives with expertise and knowledge in the areas of management, the accident program area, safety, and technical experts.

The board will typically consist of at least three voting members, including the Chairperson, where the majority of the members will be independent from the operation or activity in which the incident occurred (see Appendix 8, Learning Review Board Organization).

Members typically include the following:

- Chairperson (voting)
- Management Official(s) (voting – at least two, up to five)
- Safety & Health Manager (non-voting)
- IOL Representative (non-voting)
- Sensemaking Team Coach (non-voting)
- Response Leader (non-voting)
- Learning Review Team Leader (non-voting)
- Law Enforcement Team Leader (non-voting)
- Technical Specialists, as required (non-voting)
- Union Representative (non-voting)
- Recorder (non-voting)

Attendance by other non-board members is at the discretion of the Chairperson.

### 8.6 Learning Review Board Proceedings and Approval

The Learning Review Team Leader and the Response Leader (or their designee) will jointly present the Learning Products as well as any other reports created during the CRP (or Learning Review) to the board members. The voting members will then vote to decide whether to Accept or Return-for-Clarification any of the products or reports submitted. The Board may also make additional recommendations to improve the products.

Once the Board accepts the products, it will review and approve or reject the Safety Action Plan (SAP). The Board Chairperson will forward the organizational learning review report and recommendations to the Chief for approval.

If the Board does not accept the products and the Safety Action Plan, the Chairperson may direct the Response Leader to provide clarifying information or additional specific information, as well as establish a timeline for resubmission.

The Chief has the option to approve or to request modification to the Organizational Learning Review Report and Safety Action Plan. When approved by the Chief, the OSOH Director will coordinate with the National Leadership Council (NLC) representative where the incident occurred to deliver the Organizational Learning Report to the next of kin for each fatality. In this case, the completed FOIA-reviewed copy of the Organizational Learning Report will be delivered in person (if possible) to the next of kin. This must be completed prior to any public or agency distribution of the Organizational Learning Review Report.

The approved Safety Action Plan will be distributed to the NLC and those organizations responsible to complete the assigned action items (see Appendix 10 for a sample Safety Action Plan transmittal letter).

After completion of the Learning Review Board, the OSOH Director will ensure that all previous working draft copies of the reports are destroyed.
8.7 Distribution of the Organizational Learning Report, Individual Learning Product, and Additional Reports

Once the Organizational Learning Report has been delivered to the next of kin, the OSOH Director will direct that the Organizational Learning Report be posted to the Safety Engagement Web site available to all employees. If the incident is fire-related, the OSOH Director will coordinate with FAM Fire Operations Risk Management to have the report posted on the Wildland Fire Lessons Learned Center Web site.

The Office of Innovation and Organizational Learning Director and Occupational Safety and Health Director will collaborate to determine the best distribution method for all learning products produced by the Learning Review process.

The OSOH Director will coordinate with the Region, Station, Area (RSA) Safety Manager of the unit experiencing the incident to deliver a copy of the Organizational Learning Report to OSHA. In the event that OHSA requests a “statement of cause,” the OSOH and IOL directors will draft a proposed causal statement for approval and release by the DASHO.

8.8 Final Report Briefings and Press Releases

Each Learning Review will likely have some level of interest and involvement from other local, state, and federal governmental agencies; media; family members; and agency employees. The Response Leader and Learning Review Team Leader may be asked to participate in meetings, briefings, and possibly Congressional testimony. Any requests for interview must be coordinated through the Office of Communications and communicated to the DASHO. Presentations will be crafted to meet the requirements of the convening body and organizational protocol.

8.9 Transparency – Additional Reports

When additional information arises as a result of minority reports, research, or any other credible source, this information will be reviewed by IOL, and if approved will be made available in the same way as the Organizational Report and Field Learning Products.
9. Out-Briefings, Team Reviews, and After-Action Reviews

9.1 Objectives

- To describe the continuous improvement process for the CRP and to describe local unit team out-briefs.
- To describe the need and timing of After-Action Reviews.

9.2 Team Close-Out Briefing

The Response Leader facilitates the briefing with the help of the Learning Review Team Leader. The purpose of the team close-out briefing is to make any final team assignments.

Items to be discussed in the close-out briefing are as follows:

- Determine remaining tasks to be accomplished.
- Assign follow-up task assignments to team members.
- Determine who will maintain evidence (until final report is completed).
- Cleaning and return of borrowed equipment.
- Collection and destruction of all working papers and draft copies of reports.
- Completion of Team Leader After-Action Reports (AAR) regarding the conduct of the Learning Review and Claims Investigation, as well as recommended modifications or improvements to this guide and the CRP process.

9.3 Team Performance Review

As part of the closure for the CRP Team, it is important to review and critique the team’s performance after each phase in the process. This review is an opportunity for the team members to improve their skills and abilities for future assignments. This feedback is also valuable to the agency to make improvements in CRP training and processes.

The Response Leader facilitates the briefing ensuring all members participate and keeps the team focused on the issues. The review should include the following:

- Review of the Team Leader AAR.
- Discussion of surprises.
- Considerations for preparing for surprises.
- Actions to improve team process and performance in future assignments.
- Learning Review process critique.

At the conclusion of the team review briefing, the Response Leader should send any process improvement suggestions to IOL.
The Response Leader and Learning Review Team Leader should evaluate and make recommendations for team members to receive critical incident stress debriefing (CISD). Many times team members will say that they do not need the debriefing when in reality, the event has affected them. It is important for the Response Leader and Learning Review Team Leader to encourage personnel to attend and monitor team members for signs of stress during and after the investigation.

### 9.4 Close-Out Briefing with Internal and External Stakeholders

#### 9.4.1 On-Site Close-Out Briefing with Agency Administrator

The first close-out briefing occurs with the Agency Administrator at the conclusion of Phase 2 (frequently at the unit where the incident occurred). This presentation is normally conducted by the Response Leader, the Learning Review Team Leader, and may include the IOL Process Coach.

The Response Leader’s presentation is important, in that it will influence how the Learning Review Team is perceived. The Response Leader should keep in mind that he/she may not have complete information, as Phase 3 is in progress.

The on-site out-brief should cover the following:

- The next steps in the process, including the type of individual learning product recommended or produced and a target date for the Organizational Learning Report creation.
- The condition of all employees.
- A synopsis of the event.
- Any immediate actions that should be considered at the local unit to prevent additional injury or accidents.
- An exchange of contact information and identification of a unit point of contact should the team require local assistance during Phase 3.
- The location and point of contact for any physical material being stored in the local area that is pertinent to the review.
- Release of the accident site back to the local unit if that has not already occurred, with special instructions as needed.
- Recommendations for improvement of the CRP process and this guide.

**Note:** The Response Leader should emphasize the purpose of the CRP and Learning Review Process.

#### 9.4.2 Learning Review Close-Out Briefing

Close-Out briefings will be coordinated with delegating official or their designee.
Close-Out briefings may occur with any one of the following:

- Agency Directors
- IOL Director
- Fire and Aviation Directors
- Agency Safety Office
- Designated Agency Safety and Health Official (DASHO)
- Cooperators
- Local Authorities
- Agency Accident Review Boards
- Congressional Staffers
- Other Stakeholders

9.4.3 Post–Final Report Close-Out Briefings

Upon completion of Learning Products, the following will take place:

- The Response Leader, Learning Review Team Leader, and specific subject-matter experts may be requested by the agency(s) to make oral presentations to their management and/or agency(s) Learning Review Boards/Board of Reviews.
- The Response Leader and/or Learning Review Team Leader may be requested by the agency(s) to present the Learning Products to the immediate family.
- Upon completion of the final investigation report, the agency director(s) may be requested to personally brief higher level authorities (e.g., Secretary of Interior/Agriculture or Governors) to explain the accident and any corrective actions.
- The Occupational Safety and Health Administration may request a formal presentation detailing the factual findings and causes of the accident.

Each of these close-out briefings will need to prepare and present the appropriate information to the audience. Once the Final Report has been accepted by the agency’s director(s), the delegating official will release the teams.

The OSOH Director will work with the response team and provide detailed instructions for storage of the case file. The file will be sent via traceable means to Albuquerque Service Center for digital scanning and posting to the OSOH “O-Drive,” and the originals will be archived at a federal repository in Albuquerque, NM.

9.5 After-Action Reviews

Upon completion of each of the following: Phase 2, Phase 3, and Phase 4, the Learning Review Team Leader and the Response Leader shall conduct an After-Action Review (AAR). These AARs can be conducted in whatever manner is appropriate; however, in-person AARs have been demonstrated to be the most effective way to engage personnel. AARs should be conducted as soon as is practical following each of the listed Learning Review phases.
The Response Leader will prepare a written report of recommendations and lessons learned for each AAR. This report will be delivered to the IOL and OSOH directors for review. The recommendations will be used to improve the CRP and LR processes.
Aviation Investigation Procedures
Addendum to the Learning Review Guide

Introduction

This addendum is intended to guide the Forest Service aircraft accident investigation process and its subsequent coordination with other response teams, primarily the Learning Review Team (LRT) under the auspices of the Learning Review (LR) Guide. The Aircraft Accident Investigators (AAIs) and their Subject-Matter Experts (SMEs) will be referred to as the Aviation Technical Team (ATT) and will constitute one type of response team activated to an aviation accident. Aircraft accident technical investigations are completed by professionally trained Air Safety Investigators (ASIs) applying consistent practices and procedures that comply with established policies, laws, and regulations.

The relationship between the Forest Service ASI and the National Transportation Safety Board (NTSB) is well established, and the Aircraft Accident Investigation Guide (AAIG) provides the investigation process that complies with NTSB statute (49 CFR Part 830). The AAIG supports compliance with 14 CFR 102-33 where “Training in investigating accidents/ incidents must be provided for the agency’s personnel who may be asked to participate in NTSB investigations” and 49 CFR 831.11 where the NTSB clearly states that “Parties shall be limited to those persons, government agencies, companies, and associations whose employees’ functions, activities, or products were involved in the accident or incident and who can provide suitable qualified technical personnel actively to assist in the investigation.” It is vital that those assigned to investigate aviation mishaps are qualified and have the appropriate knowledge, skills, and experience necessary to meet the demands of working with the NTSB.

The AAIG provides the essential investigative procedures and requirements of investigators that enable the USDA Forest Service to fulfill the requirements of Part 14 CFR, Part 102-33, and 49 CFR Part 830 and 831, enabling participation as a party to NTSB investigations. The AAIG is referenced in FSM 5720, where the agency is directed to use the AAIG and mandates the appointment of appropriate Aviation Technical Specialists (ASI, SMEs) to work with the NTSB under Party Status rules.

As with all Forest Service Aviation policy and procedures, the National Aviation Safety Council endorsed the 2015 AAIG. All processes relating to aircraft accident
investigation, including Federal Management Regulations, 49 CFR Parts 830 and 831, and FSM 5720, are provided for in the guide, including all appropriate definitions and accident classification procedures (see attached AAIG).

**Coordination Procedures**

The Forest Service will not release the Learning Review Report, Safety Investigation Report (SIR), or any investigation results until the NTSB has published its final report. Any deviation to this policy requires the Designated Agency Safety and Health Official’s (DASHO) approval to negotiate with the NTSB for the early release of any document.

The NTSB investigative process requires strict compliance with 49 CFR Parts 830 and 831 in order to maintain control of the investigation information and protect the sanctity of the investigation. Any Party acting in a manner prejudicial to the investigation by violating statute (intentionally or unintentionally) will be removed from the investigation. The ASIs are the agency’s experts on NTSB process and can help assure that the Forest Service has access to critical safety information by ensuring compliance with NTSB rules. The Forest Service is interested in developing products for learning. The primary aviation product is the SIR. This collaborative document aids the NTSB in producing its final report. All activities associated with a coordinated response and drafting of the SIR must meet NTSB statutes as outlined in the Party Status Agreement. Distinct phases of aviation-accident coordination are outlined below.

**Phase 1**

**Notification, Team Selection/Duties/Responsibilities, Delegation, and Activation**

**Delegation**

The NTSB has the authority to investigate all Forest Service aviation accidents (FSM 5723.3). The NTSB may delegate the on-site investigation to the FAA or ASI.

**Team Activation**

The Washington Office (WO) Office of Safety and Health (OSOH) Director will activate the CRP and LR, and the Branch Chief-Aviation Safety Management Systems (BC-ASMS) will activate the ATT team members via phone, with follow-on formal designation via a letter of delegation. ASIs can activate SMEs as needed through the Response Leader. The OSOH Director and BC-ASMS will provide additional details for the team to include job codes, report dates, locations, and points of contact.
Notification and Process

Step 1. Activate Aviation Mishap Response Plan (For further information, see FSM 5723.21).

Step 2. Launch Search and Rescue (SAR).


- The RASM immediately reports to the BC-ASMS.
- The BC-ASMS immediately notifies the OSOH Director, who notifies the DASHO.
- The RASM immediately reports to the Fire and Aviation Regional Director and the Regional Aviation Officer (RAO).
- The RASM immediately calls NTSB Duty Office (Per FAR Title 49 Part 830.5).
- RASM immediately calls Federal Aviation Administration (FAA) Duty Office.

Step 4. The level of review is determined through dialogue between the Forest Service DASHO, the OSOH Director, and the BC-ASMS. If the DASHO delegates other than to the Region, the BC-ASMS becomes responsible for coordinating the aviation investigation.

Step 5. If the DASHO directs a Chief’s-level CRP, then the OSOH Director and BC-ASMS will determine the preliminary aviation technical team composition (based on NTSB feedback as to whether the incident meets its requirements for an accident or is a non-reportable “incident” and will notify team members as needed.

Step 6. Aviation accidents and incidents with potential (mishaps) are reviewed in accordance with FSM 5700, Chapter 5720, and AAIG.

Note: In the event of a combined aviation and ground accident, the NTSB will have overall authority of the accident scene and investigation.

Team Selection

Team member selection is coordinated between the OSOH Director, BC-ASMS, Response Leader (RL), and ASI. As the investigation progresses, Aircraft Technical Team (ATT) members may be added or released at the discretion of the RL and BC-ASMS. The ASI shall make recommendations to the RL regarding assignments of the ATT.

The Response Leader’s Duties

Also referred to as a Team Leader, the Response Leader (RL) is normally a line officer or senior agency official and is selected based on his or her experience, the severity of the accident, and the level of management representation needed. The RL must be
knowledgeable of Forest Service policy and should be appointed from outside of the
Region, Forest, or Unit that incurred the accident. The RL will have the authority to
obligate federal funds when needed for support of investigation expenses.

Duties include the following:

- May delegate the ATT’s safety to the ASI (including work/rest duty times).
- Review and approve the Accident Investigation Risk Assessment (RA).
- Coordinate in and out-briefs with the local unit.
- Coordinate public release of information with ASI or NTSB Investigator In-
  Charge (IIC) directly. The NTSB IIC only releases public information about the
  investigation.
- Coordinate with the local unit regarding HAZMAT and clean-up of the
  accident site (in conjunction with the Contracting Officer (CO) and contractor
  if the incident is a contractor-related aircraft accident).
- Coordinate with the local Regional, Forest, or Unit Aviation Officer and ASI for
  approvals of Day Trip Authorizations for NTSB Party Members to/from the
  accident site (if Forest Service aviation assets are used).
- Coordinate with the ASI in the review and development of Aviation Safety
  Alerts (if needed) for immediate accident prevention purposes; route to BC-
  ASMS.
- Aid the ASI and CO (if applicable) in removal and storage of aircraft and
  parts.
- Aid the ASI in release of the wreckage through the CO (if a contractor
  accident) and carbon copy message to the RAO and RASM in writing, after
  release from the NTSB in writing.
- Coordinate accident-site security with Law Enforcement.
- Must follow and ensure strict compliance with NTSB Party rules for collection
  and sharing of accident information.

Learning Review Team Leader

- Manage development of the Learning Review Report, per the Learning
  Review Guide.
- At the discretion of the NTSB IIC, may sign as a Party to the NTSB
  investigation along with the ASI.
- Collaborate with ASI for the purposes of developing the Learning Review
  Report.

Air Safety Investigator (ASI)

The ASI is a federal employee who has education, expertise, and experience in aviation
accident, mishap, or near-miss investigation; has knowledge of environmental, human,
and material factors and analysis in incidents; and is tasked to investigate the incident
and generate the draft SIR. The ASI will serve as primary liaison between the NTSB
Investigator in Charge (IIC) and the Forest Service RL and LR by providing technical
expertise, knowledge of procedures, operating practices, qualifications, and policies of aviation management.

**Phase 2**

**Inquiry (Discovery or Data Collection and Collaboration Phase)**

The NTSB Investigator-In-charge (IIC) only assigns Party Status to “those persons, government agencies, companies, and associations whose employees, functions, activities, or products were involved in the accident or incident and who can provide suitable qualified technical personnel actively to assist in the investigation (§ 831.11).

The Party Status serves several valuable purposes, including the following:

- Providing technical assistance to the NTSB’s evidence documentation and fact-finding activities.
- Helping the NTSB understand the unique and real-world challenges of agency operations and NTSB investigators to view the accident in the most accurate context, taking all variables into consideration.
- Ensuring that, with appropriate coordination with the NTSB, the Forest Service will have access to information necessary to expeditiously initiate any necessary preventive and/or corrective actions.

An NTSB statute states, “No party to the investigation shall be represented in any aspect of the NTSB investigation by any person who also represents claimants or insurers. No party representative may occupy a legal position (see § 845.13 of this chapter). Failure to comply with these provisions may result in sanctions, including loss of status as a party.”

**Data Collection**

The ASI and ATT coordinate with the NTSB for collection of data at the accident site. The primary duty of the ATT is to support the NTSB and help in discovering factual information, which will also be utilized to develop the SIR. During this time the ASI and ATT work under the Party Status rules to support the NTSB investigation and are essentially working for the NTSB. Once the on-site investigation is complete, the ATT will continue to work under the auspices of the party agreement to process factual information and develop the SIR.

Phase 2 ASI and ATT duties include the following:

- Maintain communication with the RL on process status.
- Sign the NTSB Party form and ensure the ATT members and potentially the LR Team Leader understand the party member privileges (briefed by the NTSB or see NTSB Party Member form).
- Ensure the completion and submission of NTSB Form 6120.1/2 (with a statement from each crewmember) within 10 days after the accident or seven days if an overdue aircraft is still missing (per CFR Title 49, Part 830.15).
- Assist the NTSB IIC in the investigation or if delegated, assist the FAA IIC in the investigation or serves as the primary contact to the NTSB IIC and FAA IIC if the investigation is delegated to the Forest Service.
- Collaborate with the NTSB in processing factual information to develop the SIR. This represents a Coordinated Response completely separate from the LR effort.
- Collect Aircraft Accident Data according to processes and procedures defined in the Aircraft Accident Investigation Guide (AAIG).
- Provide for the on-site safety of the Aviation Technical Team; ensure team members have been briefed on the Accident Investigation Risk Assessment.
- Ensure preservation of the wreckage (Per FAR Title 49 Part 830.10).
- Coordinate fire-shelter training (as required).
- Assign the tasks for the Aviation Technical Team Subject-Matter Experts (SMEs).
- Coordinate aviation transportation to and from the wreckage site.
- Assist the RL in coordinating the release of wreckage through the Contracting Officer, and additionally send a carbon-copy letter to the RAO/RASM.
- Coordinate with the RL and LR in the addition or release of SMEs.
- Ensure submission of SAFECOM for the incident/accident has been completed.
- Coordinate with the Regional Aviation Officer (RAO) and Contracting Officer on obtaining the pilot's agency-issued qualification card or removal from flight status.
- Coordinate the development of Aviation Safety Alerts (if needed) for immediate accident prevention purposes; routes to BC-ASMS.
- ASI will coordinate with the LR Team Leader to clear information through the NTSB for use in developing the LR Report. The intent is to be able to share information between the ATT and the LR Team through the proper channels.
- The SIR is always the primary task of the ATT.
- Provide the SIR to the NTSB IIC for review as expected under Party Status participation to ensure the NTSB has essential factual data to generate its report.
- Provide the BC-ASMS with the NTSB-approved SIR and safety recommendations for review.
- Provide the LR Team Leader with the NTSB-approved SIR as a technical input to the final LR Report.
- After delivery of the SIR, work with the LR Team Leader to complete the Learning Review report and Safety Action Plan.
ATT Subject-Matter Experts (SMEs)

These SMEs are responsible for providing technical knowledge and expertise in their respective subject (operations, maintenance, avionics, safety, GIS) to the ASI.

Duties include the following:

- Assist the ASI with technical portions of the SIR.
- Assist the ASI during field/crash scene investigation.
- Review aircraft, engine, accessory, crewmember, and ground aviation personnel logs and any other information pertinent to their area if expertise.

Learning Review Team Leader

The LR Team Leader (one person), if granted Party Status by the NTSB IIC, will become an observer for Situational Awareness during this time for the purpose of downstream coordination of the LR (not concurrent and not involving the ATT).

The LR Team Leader collaborates with the ASI on opportunities to assist and provide expertise in the development of relevant appendices for the SIR; an example might include coordination for Human Factors Analysis in relation to organizational learning and improvement. The analysis of agency-specific information will not include any information relating to contributing or causal factors or aviation-centric information but only analysis of organizational-related safety items. This requires access to information beyond the LR Team Leader and therefore would be at the discretion of the NTSB.

Documentation Specialist

The Documentation Specialist is an administrative specialist with experience in aviation management and operations. This individual is responsible to the ASI for maintaining all records and chain-of-custody documentation. The case file must be managed according to NTSB information collection and sharing protocols.

Duties include the following:

- Collect and file relevant information as gathered by investigation team.
- Safeguard information and prevent access to unauthorized individuals.
- Assist in keeping meeting minutes.
Phase 3

Collaboration between the ATT and the LRT: Synthesis, Analysis, and Sensemaking

All aviation accident evidence gathered during aviation accident investigations will be maintained under the NTSB’s direction and cannot be shared (even within the agency without the approval of the NTSB IIC as stated in § 831.13 Flow and dissemination of accident or incident information:

“All information concerning the accident or incident obtained by any person or organization participating in the investigation shall be passed to the IIC through appropriate channels before being provided by any individual outside of the investigation. Parties to the investigation may relay to their respective organizations information necessary for purposes of prevention or remedial action. However, no information concerning the accident or incident may be released to any person not a party representative to the investigation (including non-party representative employees of the party organization) before initial release by the Safety Board without prior consultation and approval of the IIC.”

However, it is the NTSB’s general practice to allow internal reviews for prevention and remedial action before information is released by the NTSB, as long as the reviews are coordinated in advance with the IIC and the results are shared with the NTSB. Should the Forest Service want to undertake a Learning Review of an accident to further safety before information is released from the NTSB, the party representative should coordinate with the IIC for approval.

Phase 3 Duties

At this phase, the ATT will function under the existing Learning Review Team structure. This phase will be begin when the NTSB has reached a stage in the investigative process where information can be shared more readily. This will generally be at the close of the fact-finding phase (reference Party Status Agreement).

Duties may include the following:

- The ASI and ATT help the LR Team Leader understand the technical aspects of the aircraft accident to support the development of the LR Report. Provides the LR Team leader the approved SIR and aids in drafting preliminary learning team recommendations.
- Assist the LR Team in the review of the NTSB final report and probable cause report as the SME for aviation.
- The ASI and ATT coordinate the aviation technical team’s specific recommendations with the LR Team.
Once the NTSB has drafted and reviewed the SIR, the LR Team will be provided a full copy to continue work on the LR Report.

Phase 4

Presentation of Learning Products and Recommendations to Agency Administration

At the request of the Learning Review Team, the ASI will participate in the Learning Review Board to help answer questions and address aviation-specific information and to justify aviation specific recommendations included in the Safety Action Plan.
## 10. Appendices

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10.1 Appendix 1: Employees Rights and Responsibilities in Administrative Investigative Interviews

July 11, 2011

(Reference: Master Agreement Article 4, Section 3(b))

This document addresses administrative investigations. In all types of interviews discussed below, you may be disciplined or even criminally prosecuted for making false statements. If an overt criminal violation is revealed during an administrative investigation, the investigator is obligated to stop the interview and notify Law Enforcement. This document addresses your legal rights in such circumstances; however, it does not address criminal investigations per se.

Rights to representation. There are two separate rights to representation in an interview. As noted below, whether both, one, or neither of these rights applies to a particular interview depends on whether you as the person being interviewed are (1) a subject of the investigation or are (2) a member of a bargaining unit who reasonably believes that the investigation may result in disciplinary action against you.

1. Basic right of representation for a subject of an investigation.

It is Forest Service policy to honor any request by a subject of investigation to have an advisor, lawyer, or other representative present during the interview. You need not be a member of the bargaining unit to assert this right. You may assert this right prior to the beginning of the interview or at any time during it. You may not be disciplined for refusing to answer questions without an advisor, lawyer, or other representative present if you have requested one under these circumstances. If you wish an advisor, lawyer, or representative to be present for the interview, the interview will be cancelled or postponed for a reasonable period of time to allow you to obtain an advisor, lawyer, or representative.

2. Weingarten right of representation for a member of a bargaining unit.

If you are a member of a bargaining unit and if you reasonably believe that the investigation may result in disciplinary action against you, you have the right to have a Union Representative present with you during the interview if you request it. You need not be a subject of the investigation to assert this right. You may assert this right prior to the beginning of the interview or at any time during it. You may not be disciplined for refusing to answer questions without a Union Representative present if you have requested one under these circumstances. If you wish a Union Representative to be present for the interview, the interview will be cancelled or postponed for a reasonable period of time to allow you to obtain a Union Representative. You have the right to meet with the Union Representative in advance of the interview, and during the examination,
the Union Representative may assist you. If a statement has been taken, you will be promptly provided with copy of their signed statement.

3. Voluntary interviews.

You may be asked but not ordered to participate in an investigatory interview. It is strictly up to you whether you wish to participate in a voluntary interview. You may decline to do so. If you begin to participate and change your mind, you may stop the interview and leave at any time. You will not be disciplined for non-participation. However, your silence can be construed in an administrative proceeding for its evidentiary value that is warranted by the facts surrounding your case. Since no coercion is involved in a voluntary interview, anything you say may be used as evidence against you in either an administrative or criminal proceeding.

4. Safety investigation interviews.

Safety investigation interviews are guided by the same rules as voluntary interviews. You may be asked, but not ordered, to participate in a safety investigation interview. It is strictly up to you whether you wish to participate in this voluntary interview. You may decline to do so. If you begin to participate and change your mind, you may stop the interview and leave at any time. You will not be disciplined for non-participation. The purpose of a safety investigation is to determine the cause of the incident and to develop processes that will prevent a recurrence. If an overt criminal violation is revealed during a safety investigation, the investigator is obligated to stop the interview and notify Law Enforcement.

5. Involuntary interviews.

If ordered to do so, you are required to provide information you have obtained in the course of employment to authorized representatives of the department or agency in investigations related to official matters. Failure to cooperate may constitute a basis for disciplinary action up to and including removal. You are required to answer questions related to your official duties even if your answers may lead to administrative discipline because there is no constitutional right regarding self-incrimination in administrative matters. However, you may not be coerced into self-incriminating yourself in a criminal matter. Court decisions have established that the threat of dismissal from one’s job is coercive. If you believe your answer to a question may incriminate you in a criminal matter, you are within your rights to say so and refuse to answer it. If, on the other hand, you do disclose information with criminal implications in an involuntary interview, you may be able to suppress its use in subsequent criminal proceedings on the grounds your disclosure was coerced.
6. Use immunity for compelled testimony.

The agency may compel you to answer questions that would reveal criminal acts on your part only if you are given written assurance that neither your answers nor any information or evidence that is gained through their use can be used against you in any criminal proceeding. This is known as “use immunity.” Since use immunity requires approval from the Department of Justice, it is only offered in rare and exceptional circumstances. Should you be faced with this situation, you will be provided with form FS 5300-17b (Kalkines warning), which documents the use immunity and your rights and responsibilities. Use immunity does not limit the right of the agency to impose administrative discipline as appropriate.

Note: There is no mandatory requirement to provide bargaining unit employees with this document during an administrative investigation unless the employee requests it.
10.2 Appendix 2: Initial Actions to Be Taken by Unit

X.0 Objective

To delineate the actions that should be taken at the unit where the incident occurred.

A2.1 General

The Agency Administrator is responsible to immediately initiate actions, which provide effective, efficient, and timely leadership in critical incidents within his or her jurisdiction. Exhibit X-1, Local Unit Initial Actions for Agency Learning Reviews, serves as a general guide for actions the Agency Administrator should initiate. Additional actions may also be found in the unit Emergency Response Plan. Exhibit X-1 should be faxed or emailed to the local unit upon notification of the accident by the respective agency(s) office responsible for delegating the Coordinated Response Protocol Team.

A2.2 Initiate Unit Emergency Response Plan Procedures

The Agency Administrator should determine the scope of the accident; the jurisdictions involved, and other affected agencies and implement the unit’s Emergency Response Plan.

The National Wildfire Coordinating Group publication PMS 926 Agency Administrator’s Guide to Critical Incident Management is a resource available to Agency Administrators for the overall management of critical incidents within their jurisdictions. This publication is available for download at http://www.nwcg.gov/pms/pubs/pubs.htm.

As soon as practical following the initial response, notification of the accident/incident should proceed to the following groups or individuals:

- Agency Headquarters: Designated Agency Safety and Health Official (DASHO) and Occupational Safety and Health (OSOH) and Law Enforcement and Investigations (LEI) Directors.
- County Sheriff or local law enforcement as appropriate to jurisdiction.
- Agency Law Enforcement.
- Responsible Safety Manager.
- Occupational Safety and Health Administration (OSHA) (within 8 hours if the accident resulted in one or more fatalities or if three or more personnel are hospitalized on an inpatient status).\(^{15}\)
- National Institute for Occupational Safety and Health (NIOSH) for all firefighter fatalities.
- National Interagency Coordination Center (NICC) for all wildland fire accidents.

\(^{15}\) OSHA CONTACT NUMBER: 1-800-321-OSHA.
• Public Affairs

Agency-specific reporting requirements shall be followed and notification made through chain of command. The Agency Administrator shall prepare and issue the 24-hour Preliminary Report to the appropriate officials.

More information on the 24-hour Preliminary Report, including a template, can be found in the stand-alone Learning Review Guide.

A2.3 Ensure Injured Firefighters Receive Medical Treatment (Burn Protocol)

Treatment, transport, and follow-up care must immediately be arranged for injured and involved personnel.

A2.4 Secure Accident Scene

The incident site should be secured immediately by agency personnel and/or law enforcement and nothing moved or disturbed until the area is photographed and visually reviewed.

If the accident occurred on a wildland fire, there may be a standard temporary flight restriction (TFR) (reference: FAA-TFR 91.137a[2]) in place, but verification of such restriction should occur.

Note: A TFR cannot be established to prevent media access. Should multiple aircraft be in the area, aerial supervision should be ordered to facilitate air-space congestion?

A2.5 Accounting of Incident Personnel

The responsible Agency Administrator will account for all agency personnel and non-agency personnel involved in the incident and identify any issues or concerns that may lead to additional trauma or injury (including psychological trauma) to the best of the Agency Administrator’s ability.

A2.6 Notification of Serious Injury or Fatalities

When a serious accident occurs, the responsible manager will ensure that local notifications are made (e.g., dispatch, front office, law enforcement, etc.). Names of personnel involved will not be communicated over the radio.

The Agency Administrator/Incident Commander shall prepare and submit Exhibit 2-2 NWCG Wildland Fire Fatality and Entrapment Initial Report Form PMS 405-1, download from the National Wildfire Coordinating Group Web site.¹⁶

A2.7 Assign Unit Point of Contact to Coordinated Response Protocol Team

The Agency Administrator shall assign a unit Point of Contact (POC) for the Coordinated Response Protocol (CRP) Team (ensure the individual assigned was not directly involved in the accident). This person should have local area knowledge and should support the CRP Team's logistical and administrative needs during the review. The POC is not considered a CRP Team member and should not be involved in any CRP Team discussions.

A2.8 Information and Media Releases

Release of information to the news media (e.g., news releases, talking points, etc.) should be organized with the CRP Information Coordinator.

For federal wildland fire-related CRPs, the National Interagency Fire Center (NIFC) Public Information Officer may coordinate release of information.

Information can include the following:

- Number of victims (never release names of injured victims)
- Name of fatality victim(s) if next of kin has been notified
- Severity of injuries or property damages (Do not release names of injured employees)
- Synopsis of known information
- Cause of death from autopsy results
- Release of Learning Review Reports

A2.9 Autopsy Coordination and Toxicology Request

Autopsy coordination and toxicology requests should be standardized and coordinated through the Fire and Aviation Management Medical Doctor (Jennifer Symonds, jmsymonds@fs.fed.us, (208)387-5970) for Forest Service incidents.

The U.S. Fire Administration developed the Firefighter Autopsy Protocol for the purpose of providing medical examiners, coroners, and pathologists a uniform, recommended procedure for investigating the causes and contributing factors related to firefighter deaths. The Firefighter Autopsy Protocol is available on the U.S Fire Administration Web site:

Every attempt will be made to provide this protocol to the medical examiner/coroner. The Learning Review Team Leader should follow up with the medical examiner/coroner to ensure it was provided.

A2.10 Collect Documentation for Incoming CRP Team

Refer to Exhibit X-1 for types of information that should be collected for investigations.

**A2.11 Assess Traumatic Impact to Survivors**

It is the Agency Administrator’s responsibility, with the help of main Staff Officers and managers, to assess and estimate the scale of impacts to employees on the unit resulting from a critical incident and order the necessary support. This can be done with the help of Regional/Geographic Area and/or national Critical Incident Stress Management (CISM)/Critical Incident Peer Support (CIPS) Coordinators. Each unit is encouraged to determine the CIPS capacity and expertise within the unit’s Region. Most Geographic Area Coordination Centers (GACCs) or Regional Fire Operations Risk Management Officers can help provide area or Regional/Geographic Area CIPS contacts.

**A2.12 Presentation of Relevant information to Coordinated Response Protocol (CRP) Team**

Once the CRP Team is formed and on scene, the sponsoring unit should provide an in-brief. This briefing should include the information collected to this point; any known hazards or issues of community or local concern; a Point of Contact (POC) for the sponsoring unit; location of witnesses and their availability to the CRP Team; and any other relevant information.

It is human nature to begin to draw conclusions about incidents. However, the sponsoring unit should avoid providing direction or asking the CRP Team to answer specific questions, as this may introduce bias. If the sponsoring unit has some specific goals or desires, they should be shared with the Learning Review Team Leader only.
### 10.3 Appendix 3: Local Unit Initial Actions to Support Agency Learning Reviews

#### Actions to Be Accomplished By the Unit – Prior to Learning Review Team Arrival

**Secure the Site.** Upon completion of the initial rescue and medical assistance, the scene must be secured by Forest Service law enforcement officers until released by the Learning Review Team Leader. Methods to secure the site follow:

- Ropes
- Signs
- Barrier tape
- Flashing lights
- Cones
- Posted guards

Do not move equipment, shelters, or any other items at the scene. Do not walk around the scene unless it is necessary for rescue or medical assistance. Nothing should be removed from the scene without permission from the Learning Review Team Leader or Qualified Technical Investigator (QTI). Material relevant to the incident and scene must be preserved at the scene. Photographs of the scene (video or stills) must be obtained before the Learning Review Team arrives to prevent loss tampering, vandalism, or degradation due to environmental events such as rain, snow, wind, etc.

**Autopsies.** Request an autopsy for all fatalities. Offer to pay for the autopsy if private funding is an issue. Ask the Law Enforcement and Investigations (LEI) Team Leader to provide a liaison to the county medical examiner or coroner if the Fire and Aviation Management medical officer is not available. Access to emergency (911) logs and police reports may be needed. In case of a fire-related fatality, immediately provide the county medical examiner or coroner with a copy of the FA-156 Firefighter Autopsy Protocol.

**Employee Well-Being.** The Coordinated Response Protocol (CRP) Response Team Leader will coordinate with the CRP Critical Incident Stress Management (CISM) Coordinator to provide Critical Incident Peer Support (CIPS) for affected employees before the arrival of the Learning Review Team.

**Learning Review Team Administrative Support.** The Learning Review Team, in coordination with the CRP Logistics Coordinator, will require the following:

- Wireless and/or wired internet and Forest Service intranet access
- Lodging/meeting place for the Learning Review Team (including private deliberation dialogue room); coordinate with the Learning Review Team Leader
- Learning Review Team local unit liaison, including phone numbers and fax numbers
- Office supplies (including flip charts, markers)
Material Relevant to Incident Collection. The following items should be collected in advance and secured if possible and provided to the Learning Review Team Leader on arrival:

- Radio logs (written and recorded)
- Dispatch logs
- Occupant emergency plans
- Maps
- Applicable job hazard analyses (JHA)
- Employee safety briefings to include tailgate briefings as applicable
- Team briefings
- Employee training records
- Medical examination records (may require coordination with FAM medical officer)
- Work capacity test results
- Qualifications/certifications (including red cards)
- Work/rest (timesheets) for at least two pay periods (current and before the incident)
- Recent fire assignments
- Equipment maintenance records
- Equipment performance tests
- Inspection documents
- Fire management plan
- Remote automated weather system information (RAWS)
- Weather (forecast/conditions)
- Fire behavior analysis
- Incident action plans/personnel lists
- Delegation of authority letters or memos
- Memorandum of understanding (MOUs)/agreements
- Specifications/drawings
- Press releases
- Autopsy/toxicology report (may require coordination with FAM medical officer)
- Death certificate
- 911 Log
- Internal policies/guidelines
- Unit’s safety plan

- Documentation support (at the discretion of Learning Review Team Leader)
- Printer and shredder
- Vehicles
- Fax Machine, Printer, Copier (preferably 4-in-one type)
- Speaker phones
- Access to a purchase card
10.4 Appendix 4: Team Leader Selection Criteria and MOU for Facilitating Interagency Investigations

The template below identifies the appropriate Learning Review Team Leader designation and Review Protocol selection in the case of a serious fire-related accident involving USDA Forest Service (Forest Service) and Department of Interior (DOI) personnel that results in one or more fatalities or the hospitalization of three or more employees.

Team Leader Selection Criteria

<table>
<thead>
<tr>
<th>Victim’s Location and Employment</th>
<th>Designated Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Service employee on interagency DOI-led fire</td>
<td>Forest Service Leader</td>
</tr>
<tr>
<td></td>
<td>DOI Deputy</td>
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<td></td>
<td>Forest Service Protocol</td>
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<tr>
<td>DOI employee on interagency DOI-led fire</td>
<td>DOI Leader</td>
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<td></td>
<td>Forest Service Deputy</td>
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<td></td>
<td>DOI Protocol</td>
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<tr>
<td>Forest Service employee on interagency Forest Service-led fire</td>
<td>Forest Service Leader</td>
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<tr>
<td></td>
<td>DOI Deputy</td>
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<td></td>
<td>Forest Service Protocol</td>
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<tr>
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<td>DOI Leader</td>
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<td></td>
<td>Forest Service Deputy</td>
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<tr>
<td></td>
<td>DOI Protocol</td>
</tr>
<tr>
<td>DOI and Forest Service employees on interagency Forest Service-led fire</td>
<td>Forest Service Leader</td>
</tr>
<tr>
<td></td>
<td>DOI Deputy</td>
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<td></td>
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<td></td>
<td>DOI Protocol</td>
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<tr>
<td>Forest Service employee on Forest Service fire</td>
<td>Forest Service Leader</td>
</tr>
<tr>
<td>(Not an interagency fire)</td>
<td>DOI Deputy</td>
</tr>
<tr>
<td></td>
<td>Forest Service Protocol</td>
</tr>
<tr>
<td>DOI employee on DOI fire</td>
<td>DOI Leader</td>
</tr>
<tr>
<td>(Not an interagency fire)</td>
<td>DOI Protocol</td>
</tr>
<tr>
<td>Forest Service and DOI employees on unified command or cooperator fires</td>
<td>Team Leadership and Protocol to be coordinated by Forest Service DASHO and DOI Agency Administrator</td>
</tr>
</tbody>
</table>

Appendix 4, Figure 1: Team Leader Selection Criteria Table
10.5 Appendix 5: Team Considerations for Accident Scene Evaluation

A5.0 Objective

To describe the safety, site security, and coordination requirements that precede on-scene evaluation of accident and incident sites.

A5.1 Site Safety Consideration and Operational Control

Any site security procedures that had been established prior to the Coordinated Response Protocol Team’s arrival should be documented and communicated to the Team Safety Representative and the CRP Response Leader. The CRP Response Leader should coordinate with the Agency Administrator and on-scene authority or Incident Commander for information regarding site security and access as necessary.

**Note:** The accident site must be secured and hazards identified and mitigated to an acceptable level prior to entering or visiting the site.

The CRP Response Leader should work through the Law Enforcement and Investigations (LEI) Team Leader to coordinate with local law enforcement to ensure that any available preliminary investigation information and/or special interest in the incident are known.

- If objective information that may be easily disturbed is contained within the incident site, the Learning Review and Law Enforcement Team Leaders should consider controlling access. The accident scene should be controlled.
- People not assigned to the CRP Team or not authorized (as determined by the CRP Response Leader) to the site should be prohibited from entering.
- The entire accident site needs to be controlled and the objective information protected until the CRP Response Leader releases it.

A5.2 Planning the Accident/Incident Evaluation

Once the Team arrives at the local area and completes in-briefings, assessment of the accident site is generally the next step. The Learning Review Team Leader and/or the Team Safety Representative should coordinate all accident site visits with any other agencies assigned to investigate the accident and/or those who have jurisdictional responsibilities for the accident.

For wildland fires, the following steps are to be taken:

- Receive advanced approval from the Incident Management Team (i.e. Incident Commander (IC) or delegated representative) for visiting the fireline.
• The IC will likely assign a liaison to the CRP Team to ensure this coordination takes place for each visit.
• Visitors must maintain communications with the Division/Group Supervisor or the appropriate fireline supervisor of the area they are visiting.
• Team members visiting the fireline will need specific personal protective equipment (PPE) and meet basic requirements for visiting the fireline (see non-escorted and escorted sections below.)

Required Field Attire and Fireline Personal Protective Equipment

Field Attire
• Appropriate field attire in accordance with agency policy.
• PPE as identified in the Job Hazard Analysis (JHA)/Risk Assessment (RA).

Wildland Fire
• Boots – a minimum of 8-inch high, lace-type, leather exterior work boots, with Vibram-type or other 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
• Fire Shelter (M-2002)
• Hard hat with chin strap
• Yellow long-sleeve flame resistant shirt
• Flame resistant trousers
• Leather or leather/flame resistant gloves
• Hand tool
• Water canteen
• Ear plugs/hearing protection if exposed to high-noise-level equipment
• Other equipment or PPE as identified by local conditions, material safety data sheet (MSDS) or Job hazard Analysis/Risk Assessment

Team members who visit the fireline should have these items or make arrangements to obtain these items upon arrival and before traveling to the site.

Visits to the fireline may be “escorted” or “non-escorted” depending on the following requirements:

Non-Escorted: Visitors must have successfully completed the Work Capacity Test (WCT) at the “light” fitness level. Non-escorted visitors (1) must have adequate communications and radio training; and (2) must have completed the following training: Introduction to Fire Behavior (S190); Firefighter training (S-130); and Annual Fire Safety Refresher Training. Deviation from this requirement must be approved by the IC for other non-escorted support personnel involved in vehicle operations or other support functions or established roadways and working in areas that pose no fire behavior threat.
Escorted personnel: All personnel lacking the above training and physical requirements must be escorted while on the fireline. Visitors must receive training in the proper use of PPE.

The requirement for carrying hand tools and water is 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 at the Single Resource Boss. The Incident Commander must approve any deviation from this requirement.

Helicopter Transportation and Over-Flights (Fire and Non-Fire)

Personnel who take helicopter flights must meet requirements as identified in the Interagency Helicopter Operations Guide (IHOG) and receive a passenger briefing and have the following required PPE: A flight helmet, leather boots, fire-resistant clothing, and all leather or leather and Aramid gloves. Occasional passengers have no training requirement, but a qualified flight manager must supervise loading and unloading of passengers. (Check IHOG requirements prior to embarking.)

A5.3 Approaching the Accident Site

The Learning Review Team Leader has control of the accident site and should approach the site methodically, obtaining the overall picture to identify and preserve perishable information upon arrival at the site. Prior to arrival on-site, the Learning Review Team Leader will address or delegate the following:

- Identify accident-site attendees
- Determine extent of the site to be surveyed
- Identify necessary tasks, their completion order, and person(s) responsible
- Note site security and entry requirements (if any)
- Conduct initial site description and mapping
- Take photographs detailing the entire site and objective information before moving items
- Collect objective information
- Log objective information; items removed from the accident site must be recorded in the objective information log to establish the chain of custody

A5.4 Accident Site Initial Description

The site description needs to be carefully prepared to ensure it is accurate and clear. Drawings, photographs, maps, and historical records can all be useful.
A5.5 Accident Site Integrity

In most cases the accident site has been disturbed (e.g., EMS response). If needed, site reconstruction or imagery can be developed using witness statements, photographs, digital film, or any other means available to the CRP Team.
10.6 Appendix 6: Facilitating Treatment of Traumatic Injuries

File Code: 6180 Date: July 1, 2013
Route To: Revised Addendum to Facilitating Treatment of Traumatic Injuries
Subject: To: All Employees

This letter provides additional guidance to assist employees, supervisors, and units in addressing traumatic injuries, including those that are incident (wildfire) related. The first priority in a work-related traumatic injury is to ensure the employee receives expedient medical treatment.

We recognize the nature of an injury can complicate field treatment, stabilization, and transport of traumatically injured employees. The seriousness of an injury may be difficult to determine; therefore, all work-related traumatic injuries will be assessed by the on-site individual with the highest level of medical certification. This person will direct patient care, transport, and provide treatment until the employee is released to the care of a senior medical professional (e.g., life-flight nurse/paramedic, ambulance paramedic, emergency room physician, etc.). A seriously injured employee will be transported to the nearest emergency room or trauma center, unless otherwise directed by a physician. The local unit shall immediately assign a liaison to provide assistance to the injured employee. The liaison will communicate on behalf of an incapacitated employee to his/her family, coworkers, and supervisor as well as direct media inquiries to the appropriate Public Affairs/Information Officer and Line Officer. In addition, the liaison will assist the Human Resources Management, Workers’ Compensation (HRM WC) case manager in obtaining information required to expedite the claim process.

General guidance in dealing with traumatic injuries sustained in an emergency incident is found in the Interagency Incident Business Management Handbook, Chapter 10, and the Interagency Standards for Fire and Aviation Operations, Chapter 7. As these publications provide interagency direction, please refer to the steps below and the enclosed document for Forest Service-specific guidance on traumatic injuries involving burns.

- After on-site medical response, initial medical stabilization, and evaluation are completed, the decision to refer the employee to a specialty care physician/facility is made only by the attending physician. Workers’ Compensation (WC) benefits may be denied in the event the employee is transported to a specialty care physician/facility without a referral from the attending physician.
The Agency Administrator or designee for the incident will coordinate with the employee’s home unit to identify a patient liaison. This liaison will help the injured employee file the WC claim and coordinate with Human Resources Management (HRM) WC.

Our goal is to ensure our injured employees are afforded quality medical care in accordance with the Federal Employees Compensation Act. If you have questions regarding this letter, please contact Kirk Powell, WC Program Manager, at (505) 944-8116, or kdpowell@fs.fed.us.

/s/ Gerry L. Jackson (for)
J. LENISE LAGO

Deputy Chief for Business Operations

Enclosure

cc: pdl wo ops asc hrm hros

Kirk D Powell
10.7 Appendix 7: Burn Protocols and Treatment

NATIONAL WILDFIRE COORDINATING GROUP
National Interagency Fire Center
3833 S. Development Avenue
Boise, Idaho 83705

MEMORANDUM

Reference: NWCG#012-2008
To: NWCG Executive Board
From: NWCG Chair
Date: July 10, 2008
Subject: Standards 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 designate 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 expedited, 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 designate having jurisdiction and/or firefighter representative.

The agency administrator or designate 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 designate and/or firefighter representative, and the firefighter’s physician to assure that the best possible care for the burn injuries is provided.

NWCG#012-2008
Standards for Burn Injuries

Appendix 7, Figure 1: Burn Protocols and Treatment, Page 1.
**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.

As list of possible burn care facilities can be found at: [http://www.blm.gov/nifa/st_en/prog/fire/im.html](http://www.blm.gov/nifa/st_en/prog/fire/im.html).

For additional NWCG incident emergency medical information see: [http://www.nwci.gov/teams/shwi/emt/index.html](http://www.nwci.gov/teams/shwi/emt/index.html)

If you have any questions, please contact your agency representative to the Safety and Health Working Team.
10.8 Appendix 8: Learning Review Board Organization

(Attendance of other non-board members at discretion of LRB Chairperson.)

Appendix 8, Figure 1: Learning Review Board Organization Chart
10.9 Appendix 9: Learning Review Board Letter of Transmittal

(Cut and paste below to latest official letterhead)

File Code: 6730
Route to:

Subject: Learning Review Board Letter of Transmittal
(Insert name and location of accident)
(Insert date of accident)

To: Chief

On (insert date) employee(s) working on the (insert name) Forest in Region (insert region number) died when (insert brief statement of circumstances). A Chief’s-level learning review team was dispatched to review the accident. The learning review team’s draft report was presented to the Chief’s Learning review Board and was accepted (or accepted with some revision).

The board has recommended actions to help prevent similar accidents from occurring in the future. Please review and approve the enclosed action plan and letter of transmittal.

If you would like to discuss these actions please contact me.

Chairperson, Learning Review Board
(Signature)

(Enclosure)
Appendix 10: Action Plan Transmittal Letter Template

(Cut and paste below to latest official letterhead)

File Code: 6730

Route to:

Date:

Subject: Learning Review Board Action Plan, (insert name and date of accident here)

To: (Deputy Chiefs, Regional Foresters, Station Directors concerned with the accident or action plan.)

A Chief’s Office Learning Review Board (LRB) was convened (insert date), regarding (insert type of accident and location). The victim(s) was (were) a Forest Service employee(s) who is (are) member(s) of (insert unit, region or station).

The Chief’s Office Learning review Team presented a report to the LRB. The report was reviewed and approved (approved after some revision). An action plan was developed by the unit experiencing the accident to focus on key actions that, when implemented, would best prevent similar mishaps in the future.

I approved the LRB’s recommended action plan for implementation by the responsible units. Please review the enclosed action plan and take the appropriate steps to ensure completion of each respective action by the assigned date.

When an action is completed, notify the Office of Safety and Occupational Health (OSOH). Quarterly status reports should be sent to the OSOH for action items with out-year completion dates.

Chief

(Enclosure)

cc: Directors, (responsible for action items)
Appendix 10, Figure 1: Sample Letter SAP Distribution
10.11 Appendix 11: LRB Safety Action Plan Template

This report should be placed on Forest Service letterhead.

Name of the Incident Fatal Accident

Date

Learning Review Team Recommendations:

1. ________________________________ by April 1, 2018.

2. ________________________________ with a due date of March 1, 2018.

3. Develop this report and video into a training product designed for all

   The team recommends __________________ for this effort with a due date of
   March 1, 2018.

________________________________

J. LENISE LAGO
Designated Agency Safety and Health Official

APPROVED _____ DISAPPROVED _____

DATE ___/___/______

________________________________

THOMAS L. TIDWELL
Chief
10.12 Appendix 12: 24-Hour Report Sample

Appendix 12, Figure 1: Sample 24-Hour Report
10.13 Appendix 13: 72-Hour Report Template

This report should be placed on Forest Service letterhead.

File Code: 6730

Route To:

Subject: 72-Hour Preliminary Information Report, [insert incident name]

To: Lenise Lago
    Designated Agency Safety and Health Official

Number and Type of Injuries: Name: [insert name of injured person(s)]

On the [afternoon/morning] of [insert date and brief description of the event] A Learning Review Team has been assigned to the incident, and the review is underway.

Narrative:

Give a description of the event based on the information known at this point in the review. Some of these descriptions may not have much information; provide what you can to make the situation as clear as possible to leadership.

/S/ NAME,

LEARNING REVIEW TEAM LEADER

cc: Steven C Schlientz, Beth Pendleton/Associate Chief, [Regional Forester], Tracey Perry/Director LEI
10.14 Appendix 14: Tips and Techniques

Tip: Focus Group Sessions

Focus group sessions are an integral part of the Learning Review Process. Through the use of focus groups we can leverage multiple perspectives to help us interpret and make sense of the event under review, to uncover and identify biases, and to identify or vet any proposed recommendations.

One way we have used the focus group concept successfully was by hosting a two-day session where a group of people could have a face-to-face discussion. In this case, the session began at noon on the first day and ended at noon on the second day.

In order to select focus group members, we identified the communities of practice that were involved in the event (e.g., sawyers, fire aviation personnel, hotshot crew members, engine crew members, line officers) and chose representative individuals from the appropriate communities. The Learning Review Team Lead/IOL coach gave the participants a rough draft of the complex narrative composed during Phase 2 of the Learning Review process. They were given access to this document before the face-to-face meeting to give them a chance to digest it. Once they had read the narrative, they met with the Learning Review Team to discuss the event during the two-day face-to-face focus group meeting.

Initially, the topic of discussion centered on whether the document gave an easy-to-follow description of the event, whether it evoked questions or curiosities that were not adequately covered, and what lessons the focus group participants drew from the document. These topics took up most of the first day. Up to this point, the discussion was largely focused on building better firefighters. At the end of the second day, the participants were then asked to look beyond the firefighters and try to identify systemic weaknesses. They were presented with the Herald of Free Enterprise case study (for more information about this case, please contact IOL) to give an example of a review that tried to take into account a bigger picture. The participants were then given the academic specialists’ reviews of the narrative as homework to read that night. They were asked to focus the next day’s discussion on their reflections of the academic input and reflections on the current system of fighting fire. This was an attempt to achieve a transdisciplinary mindset (see below in this appendix).

We closed out the second day by asking for ideas about recommendations that they thought should come out of this event. Each potential recommendation was posed to the whole group in an effort to understand the impact of the recommendation to a wide variety of communities of practice. The focus group was excused and the Learning Review Team stayed together for the next couple of days in an attempt to incorporate the feedback from the focus group and the academic specialists.
This example is intended to illustrate one way to utilize focus groups. You may find that for your particular incident you would like to try something different, and that is perfectly acceptable. You may find that you need to conduct multiple focus-group sessions in order to get a clear understanding of the event or how best to formulate recommendations. The Learning Review process is designed to be flexible enough to give leeway to the Response Leader to conduct the review in a way that makes sense given the context of each individual incident.

**Technique: Sticky Note**

Pertinent information can be captured on sticky notes and placed on a wall to aid the team in capturing the complex narrative. Sticky notes work very well for this process, as they can be rearranged on a large sheet of paper as the narrative unfolds. In this way, communication paths, interconnections, interactions, decisions/actions, and contradictions can be depicted like an incident map. Use different color cards to represent key information and consider using a large roll of paper that can be extended as large as needed and then re-rolled for transport.

Some strategies use colors to represent information about specific individuals or types of information (observations, conclusions, additional information). Colors can also represent information from specific sources, with each source having its own color. Cards can be arranged on a timeline, by event (decision or action), command-control-communication-management, by level of interaction, or free form to allow patterns to emerge from the information (see picture below).

**Free-Form Information Organization**

Sticky notes can be used for “free-form” information organization. In this example green represented what we knew; red, what surprised us; yellow, where more information was needed; and orange, lessons learned by participants.

Once information has been transferred to cards, a relationship between the data points may emerge. Dialogue within the Learning Review Team will facilitate this alignment and the story, or narrative, will become clearer. Conflicting accounts will also emerge, along with areas that require additional information.

**Technique: Facilitated Dialogue Sessions**

A facilitated dialogue session is one type of focus group. Typically, it is conducted with people who were involved with the event under review. The review team carefully considers which personnel should be in the room for the session. The facilitator may
find that multiple sessions need to be conducted with different personnel for the particular incident. Ground rules are set at the beginning of the session such that respectful interactions between participants are required (see a fuller list of ground rules below). The discussion is guided by the facilitator whose aim is to foster trust, respect, and honesty among all in the session. The event is discussed as thoroughly as possible so that all members have a clear understanding of the perspectives of everyone in the room. This discussion will likely provide a means of gaining a better understanding of the context surrounding decisions and actions. It is not uncommon for participants to walk into the room harboring hard feelings for other members of the dialogue session and walk out of the room feeling much less animosity toward others in the group as a result of understanding the event from other perspectives. This can be a very powerful technique, but requires a great deal of skill on the part of the facilitator.

**Principles and Agreements for All Involved in the Facilitation**

1. We have clear agreement with the Agency Administrator that no administrative actions, (that is, disciplinary actions such as letters of caution, stand-downs, and forced re-trainings) may result from anything learned through the Learning Review process. If there is any question about this, stop and consult with the Response Leader.

2. Respectful discussion is the rule; it can be emotional, but the dialogue remains respectful.

3. Learning for future events is more important than assessing past blame. In fact, the assessment of blame can inhibit learning.

4. We all make mistakes—it’s inevitable; it’s the human condition. It’s okay to openly discuss these decisions and actions that appear to be errors; however, the intent of this process is to build context around the decision or action not to judge it as error.

5. Almost all human actions and decisions are intuitive responses to conditions that are largely based on past experiences and training. It is extremely rare that employees are actually careless, meaning that they didn’t care about the outcome. It is far more likely that they did not believe that their actions could or would result in the adverse outcome.

6. Accidents are almost always the result of combinations of normal performance variability and chance combinations of unexpected events. The unexpected is a natural outgrowth of complex systems.

7. The dialogue should be facilitated to help all the participants to recognize the conditions that supported actions and decisions.
Participants in the Dialogue Session will vary with conditions and the information gathered. There may be more than one facilitated dialogue, depending on this information. The IOL assigned process coach can be helpful in finding resources to assist with the selection of participants. Typically participants include everyone directly involved in the event including permittees, outfitters, cooperators, etc.

Depending upon the situation, consider including the following:

- Supporting CRP team members
- Supervisors of people involved
- Project Planners
- Project leaders
- Trainee Facilitators

When project leaders, supervisors, and agency administrators are involved in the dialogue the discussions often become broader in scope with organizational and interdepartmental topics included. However, in some cases it may be more productive to conduct the discussion without these overhead employees present. Indeed as a general rule, supervisors should not be present unless they were directly involved in the event. The Response Leader and Learning Review Team Leader should confer to identify any of these sensitivities. Don't be afraid to ask employees themselves who should be involved.

**Tip: A Discussion on Different Models of Accountability**

The driving principle of prevention through learning moves us to consider how accountability relates to an incident. Essentially, accountability does not happen as a result of an event, rather accountability is an ongoing process. It happens during normal operation and rests in the day-to-day expression of interest and engagement (dialogue) across all levels of the organization. This approach describes accountability in terms of three dimensions: (1) hierarchical and upward; (2) peer and self; and (3) the need for the organization to be accountable at all levels to learn from the event.
One model of accountability is often limited to a view of holding subordinates accountable for actions (hierarchical). The common response, on the part of those “being held accountable” is often defensive and directed upward, asking, “What is the organizational or leadership role in accountability?” This can degrade into a form of finger pointing that can inhibit learning from the event. Another model of accountability is illustrated on the horizon line in the diagram above. In this case, we consider peer accountability—how we hold each other accountable as peers. Self-accountability, like peer accountability, is often influenced by the culture of the organization. It represents how we react to adverse events in terms of our own accounts and responsibilities.

It can be important, even valuable to understand how these forms of accountability were enacted leading up to the incident. However, after an event these forms of accountability rarely lead to more than simple forms of blame, which can destroy the willingness of our people to provide accounts.

Post event we agree to limit accountability to holding ourselves accountable to learn from the event. Learning from an event can reveal aspects of our organization that can be difficult or painful to see. It is important that we understand this is an important aspect of learning.

**Tip: A Discussion on A New Mental Framework — Transdisciplinarity**

**What is transdisciplinarity?** Historically, traditional science has been about breaking things down and gaining an understanding of component parts. That type of thinking has proven to be incredibly useful. But it also has limitations. The emerging concept of transdisciplinarity was born from the necessity to try to understand the relationships between component parts in some circumstances.
For example, breaking things down in order to understand them works really well when you are working with a machine. If the machine breaks down, a good mechanic can find the broken part and repair the machine so that it works as good as new. If the broken part is a bolt, the mechanic can replace the bolt with a new bolt and all is well. In other words, the relationship with that particular bolt and the particular nut into which it was threaded into had no effect on the overall functioning of the machine.

In living organisms, the situation is not so simple. Sometimes you can isolate the broken part and replace it with a new one (e.g., a heart transplant) but extra steps need to be taken to ensure that the relationship with the new heart will work with the rest of the body. The person is usually put on anti-rejection medication for the rest of his or her life. Care also has to be taken about how the transplant operation takes place. A heart can’t be taken out of a person while doctors shop around for a new one, waiting to finish the operation until a new heart can be found. However, a mechanic can tear machines apart and then wait months for a new part before fixing it and the machine will still work. Living systems don’t work like that. The body has a special relationship with the heart, and if the heart is missing for too long, the body dies. Machines don’t die.

When we are dealing with machines, we can reduce things to their component parts without consequence; in other words we can afford to be reductionistic in those systems. Transdisciplinarity was created as an attempt to cope with systems that cannot be understood using reductionistic thinking. Systems that cannot be understood through reductionistic thinking are called complex systems. That is why one can’t really talk about transdisciplinarity without talking about complexity. Complex systems are sometimes referred to as open systems. Simple or complicated systems (systems where reductive thought still applies)\(^{18}\) are sometimes referred to as closed systems.

**How is it different from interdisciplinarity and multidisciplinarity?**

Interdisciplinarity and multidisciplinarity can still subscribe to reductionistic thought. According to some academic literature,\(^{19}\) interdisciplinarity situations occur when somebody from one discipline borrows ideas from another discipline. In other words, they take one component part and apply it to a new system. Interdisciplinarity does not require you to let go of reductionistic thought patterns.

Multidisciplinarity refers to the combining of people with different disciplinary backgrounds into a single team to accomplish a goal. Many times these teams are treated as if they were a machine, with each discipline representing a component part of that hypothetical machine. When multidisciplinary teams are treated as if they are

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machines and no thought or effort is expunged to manage or foster relationships between team members, multidisciplinary teams are usually not capable of rising to the task of successfully interacting with complex systems. If multidisciplinary teams use the collective backgrounds of their members to find what the philosopher Edgar Morin calls pertinent knowledge,\(^{20}\) they don’t try to apply reductionistic thinking to complex systems; they actively foster relationships between team members and those they study (i.e., subjects), and they are willing to admit that the inquirer is part of the inquiry\(^{21}\) they would qualify as transdisciplinary teams. Recognizing that there is no truly objective viewpoint is a telltale sign of transdisciplinarity. Everything said is said by someone who holds a limited perspective and is susceptible to bias.

The Learning Review Process tries to take the idea of limited perspectives into account by striving for a transdisciplinary mindset and through the utilization of focus groups to gain as many perspectives as possible.

**What is its relationship to disciplinary knowledge?**

Disciplinary knowledge serves as the source for pertinent knowledge.\(^{22}\) If a transdisciplinary scholar is trying to solve a problem, he or she would sift through disciplinary knowledge in order to find knowledge that is pertinent to solving the problem at hand. The difference here is that disciplinarians tend to try to learn how to know, where transdisciplinarians tend to try to know how to learn.\(^{23}\)

Traditional disciplinarians tend to subscribe to the notion that command, control, and planning are useful tools in managing systems (machines, organizations, organisms, etc.). Transdisciplinarians recognize that command, control, and planning are useful tools for dealing with closed systems, but tools like sensemaking, learning, and improvisation are better suited when dealing with open systems.\(^{24}\) For example, to learn about the ins and outs of improvisation, you might consider buying a book about improvisational comedy in a transdisciplinary attempt to obtain pertinent knowledge about how improvisation works—not because you are trying to learn how to be funny, but to gain insight in how improvisation works.

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24 Ibid.
Learning Review Guide Glossary

24-Hour Preliminary Report - This initial report contains the first details of the accident and is given to the delegating official by the local unit within 24 hours of the accident or incident.

72-Hour Expanded Report - The first product created by the Learning Review Team; it is prepared by the Learning Review Team Leader and signed by the Response Leader, normally within 72 hours of the team’s arrival.

Academic Review – A review generated by academic and/or professional subject matter experts to assist in the sensemaking process during Phase 3.

Accountability – Traditionally this involves taking or being assigned responsibility for something that you have done or being held responsible for something you are supposed to have done. From a “learning perspective,” the organization is accountable to learn from the event and individuals are accountable to share information for this purpose.

After Action Review – A process used by the team after Phases 2, 3, and 4 of the Learning Review to capture lessons learned and improve future performance.

Agentive Language – The use of language to ascribe causality to a person’s actions, e.g., “She broke the vase.” This can create a linguistic trap that not only makes the person the agent of the action but also blames them for it.  

Analysis – A term from the 1580s meaning, "resolution of anything complex into simple elements." Because the Learning Review strives to understand complex systems, qualities of the system will sometimes remain unresolved. Analysis is only performed on simple and complicated systems, such as machines or mechanical processes. Complex systems require sensemaking, such as human decisions and actions.

Bias – An inclination or outlook to present or hold a partial perspective, often accompanied by a refusal to consider the possible merits of alternative points of view.

Community of Practice – A group of people who share a craft and/or a profession; e.g., wildland firefighters.

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**Complex Narrative** – A story of the event that recounts the perspectives of those involved and allows for diverse, even conflicting accounts to be captured. A complex narrative does not try to resolve multiple perspectives into one neat story that has a beginning, middle, and an end.

**Complex System** – A system can be considered complex if it meets four qualifications: diversity, interconnection, interdependence, and adaptation. Complex human systems cannot be reduced to the “sum of their parts” because human influence is dynamic (adaptive) and emergent. This is opposed to simple or complicated systems—such as machines, which can be deconstructed and put back together in working order.

**Complicated System** – A system that has a limited number of components or actions, which can be reduced to its parts and then reassembled into working order; e.g., an oil refinery is a complicated system because it has many parts, redundant systems, and defenses of depth (parts are interconnected, interactive, and diverse).

**Conditions** – Performance influencing factors, which highlight aspects of the human-system interaction. Conditions can provide situational context around decisions and actions.

**Confirmation Bias** – The tendency to interpret, or look for, evidence as confirmation of your own existing beliefs or theories.

**Coordinated Response Protocol (CRP)** – Initiated by the Designated Agency Safety and Health Official (DASHO), the CRP is implemented when there is an accident that is significant enough to warrant a Chief’s-level review (such as a death or three or more persons admitted to a hospital). The CRP is designed to minimize the impact of the accident review process on agency personnel who were involved in an accident. CRP will coordinate a number of reviews and investigations, including: claims, survivor benefit reports, coroner reports, and the Learning Review. Additional resources may include critical incident stress management, on-scene law enforcement site security, hazardous material handling, logistics, and safety.

**Cultural Bias** – Deep organizational assumptions and beliefs that are often manifested in rules, espoused values, regulations, policies, and procedures. These assumptions are the basis of how we believe the organization functions and what is critically important to leadership (often what is measured, rewarded, and punished). They can limit or expand the individual and organizations ability to learn or accept new information.

**Dispositional Model of Judgment** – A human behavior model that assigns the cause or responsibility of a behavior or action to internal characteristics, rather than outside forces acting on the person. This model often considers the actions of an individual to be “right” or “wrong” and then judges the person as “good” or “bad.”
**Documentation Specialist** – Learning Review team member in charge of tracking, organizing, and cataloging documents that are relevant to the Review.

**Field Learning Product** – A product created by the Learning Review that is intended to help field personnel learn from the event. This product should stimulate dialogue in the field or communities of practice.

**Focus Group** – A group of people, often from the same community of practice, assembled to participate in a guided discussion about a topic. Focus groups are used to vet what is being learned by the Learning Review Team, such as the network of influences map, emerging learning goals, and recommendations.

**Hard Truths** – Knowledge that is difficult for a person or group to accept without changing their world view or culture. The Learning Review should try not to avoid hard truth topics or questions that challenge the “norm,” as this would be a bias in the process that could significantly limit the ability to learn from the event.

**Heuristic** – A mental shortcut used to solve a particular problem by generating an approximate, instead of complete, answer to a question. Heuristics can lead to cognitive bias, plan continuation, simple solutions, and routine responses.

**Hindsight Bias** – The tendency of people to overestimate their ability to predict an outcome. This bias makes the event seem more predictable than it really was. It is easily recognized when reports use counterintuitive judgments, such as, “They should have...” and “If they had...”

**Individual Bias** – The effect of cognitive limitations, opinions, and individual experience on decisions and actions. A partial perspective that limits a person’s ability to consider other information or points of view.

**Investigation** – A noun of action from old Latin and French, “a searching into, a searching for;” to observe or study by close examination and systematic inquiry.  

**Knowledge by Acquaintance** – The use of first-hand or hands-on information.

**Knowledge by Description** – A way to make first-hand knowledge more public by sharing with others through language.

**Learning Review** – The most robust of the Forest Service’s review processes designed to facilitate the development of a learning culture and to improve organizational and individual resilience. It embraces traditional forms of investigation for mechanical systems and introduces a sensemaking approach to assess the human dimension, which focuses on conditions surrounding actions and decisions.

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**Learning Review Board** – A formal board that includes senior leadership, which meets to approve the Learning Review Organizational Report and the distribution of the learning products.

**Learning Review Team Coach** – This position acts as a coach throughout the entire Learning Review. In Phase 3, this position is a co-lead position that works side by side with the Learning Review Team Leader from Phase 2 to facilitate the Sensemaking Phase of the Learning Review.

**Learning Review Team Leader** – Coordinates the initial inquiry (Data Collection Phase) and participates in the Analysis and Sensemaking Phase as a Co-Lead.

**Letter of Delegation** – A letter generated by the Agency Administrator to designate the Learning Review Response Leader and key Learning Review team members. This letter authorizes the Response Leader to conduct and allocate funds for the Review.

**Network of Influences Map** – A sensemaking tool that shows the complex conditions, pressures, and influences that employees experienced during the event. This network is often displayed as a visual “map” that serves as the initial step in trying to understand why the event happened by placing key decisions/actions in the context of the event.

**Objective Information** – Information that is based on “facts” that are observable by others or are measurable; e.g., skid marks on a highway; the measurement of the marks is objective information while the interpretation of their meaning is subjective.

**Organizational Learning Product** – A product of the Learning Review that is designed for organizational leadership. The product should help leadership learn what happened and why it happened, so that leadership can learn from the event and enact systemic changes.

**Outcome Bias** – A cognitive bias, which refers to the tendency to judge a decision by its outcome, as if an all-knowing “crystal ball” was available to participants during the event. This bias ignores the complex network of influence surrounding the decision maker at the time of the event.

**Response Leader** – In a CRP level incident, the Response Leader is delegated by the Chief to coordinate all aspects of the Coordinated Response.

**Review** – A formal assessment or examination of something with the possibility or intention of instituting change, if necessary.

**Safety Action Plan** – Format for presentation of recommendations to the Learning Review Board.

**Safety Alert** – A formal alert that is prepared when someone has identified an issue that poses an imminent threat to life or property (e.g., environmental conditions that may
lead to a further accident if not addressed quickly). Any Team Leader can prepare a draft Safety Alert, which identifies the hazards and recommends corrective actions.

**Sensemaking** – A process of understanding actions and decisions in a complex system (any system that adapts to conditions or shows the ability to learn – e.g., any human system). The Learning Review uses this process in Phase 3 to explore all available perspectives from the event and place the decisions/actions of event participants in the context of the event by asking, “Why did it make sense for the people to do what they did?”

**Sensemaking, post-event** – A dialogic sensemaking process where people review and make sense of information presented in the field or organizational learning products.

**Sensemaking, real-time** – The process by which people work to understand issues and events that are novel, ambiguous, confusing, or in some way outside expectations. Sensemaking is both an individual and a collective or group activity that helps people understand an unfolding event.

**Simple System** – A linear system where parts are interconnected and interactive. A simple system has the strongest cause and effect relationships, where a simple cause can create a direct predictable and consistent effect; e.g., if a wristwatch spring breaks, there is only one consequence. Failures in this system can be trended and predicted with a high degree of certainty.

**Subjective Information** – Unlike objective information, this information has been colored by the heuristics of the speaker or writer that provides it. Subjective information often has a basis in reality but reflects the perspective through the lens of the person; e.g., an eyewitness account of an event may provide essential information about decisions/actions that occurred but cannot be seen as a complete account of the event.

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