TEXAS FOREST SERVICE, PROJECT DIRECTOR
UNITED STATES FOREST SERVICE, REGION 8 (CO-SPONSOR)
FEDERAL EMERGENCY MANAGEMENT AGENCY, REGION VI (CO-SPONSOR)

INCIDENT MANAGEMENT TEAM
ALL-RISK OPERATIONS AND MANAGEMENT STUDY

August, 2003

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August 30, 2003

Mark Stanford
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Texas Forest Service
3833 S. Texas Avenue, Suite 130
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Dear Mr. Stanford,

I am pleased to submit with this letter the report of my analysis of the issues that the wildland fire service's Incident Management Teams confront as they consider their role in all-risk response. This final version incorporates comments from three reviewers.

The members of the 21 Incident Management Teams that supported the Columbia shuttle recovery operation made important contributions this study. It is very clear that these teams take their firefighting and other emergency and resource management responsibilities very seriously, and that they view quality service to America's citizens among their highest priorities.

I hope the findings in this report will assist the natural resources agencies at the local, state, and federal levels in further all-risk emergency response. The observations in this study are advisory in nature. Government officials should make all final decisions.

I will distribute copies of this report to interested officials in the Department of Homeland Security and on the Homeland Security Council Staff. I understand that your staff will provide copies to the project's co-sponsors and to all participants and guests at the June 17, 2003 IMT meeting in Reno, NV.

It has been a genuine pleasure working with you and your staff. Please convey my gratitude to your staff for their professionalism and support. If you have any questions or comments, please don't hesitate to call.

Sincerely,

Amy K. Donahue
Principal Investigator

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

The setting

The project is prompted by the space shuttle Columbia recovery effort that took place in East Texas and Louisiana from February 2 through May 10, 2003. Twenty-one Incident Management Teams (IMT's) performed a central response role in the operation by conducting a ground search of 680,000 acres. The Columbia recovery operation was one of the largest in history, and it coincides with one of the most significant government reorganizations in history: the creation of the new Department of Homeland Security.

Purpose of this report

This survey project is designed to draw on the broad experiences of the IMT's that participated in the Columbia shuttle recovery to inform the future of inter-agency, intergovernmental all-risk incident management.

Methodology

The analytic objectives of this study and the need for a systematic stakeholder assessment warranted a multi-perspective, multi-method data collection and analysis effort. The instruments and analytic techniques employed during this project include several individual meetings and interviews with wildland fire service officials, a day-long facilitated conference, three written surveys of IMT members, and a review of archival materials that document administrative and operational policies and emergency response activities of the natural resource agencies at the federal and state levels.

Major findings

1. Among the IMT members, there is a universal belief in, and commitment to, the use of unified command and the Incident Command System (ICS) as the most appropriate tools for successful incident management.

2. The IMT's feel capable of managing all-risk incidents, though many feel that they lack support from agency officials to engage these missions. One important reason for this is the potential resource conflict between all-risk responses and wildland firefighting, which is the primary mission of the IMT's.

3. There is a strong feeling that IMT's lack the specialized expertise, training, and equipment (especially personal protective equipment) required to manage Weapons of Mass Destruction (WMD) incidents, though many believe that they are capable of locating appropriate resources and incorporating them into their incident management system. To a lesser degree, these same concerns were expressed about hazardous materials (HAZMAT) incidents.

4. Many team members expressed serious concerns about the clarity and appropriateness of personnel funding mechanisms and resource ordering authorities.

5. There is broad agreement that it is important and useful to the team's capacity to manage an incident to interact with and integrate other agencies and outside experts.

6. Beyond ICS, the most commonly cited characteristics of successful incident management by the participating IMT's are: good team dynamics, effective communications, a problem-solving orientation, flexibility and adaptability, appropriate training and qualifications for team members, interagency and interdisciplinary cooperation, clear support and delegated authority from the home and receiving government, and the ability to order required resources.

7. There is broad agreement that the wildland fire service incident management system is tried and true, after years of development and refinement. The IMT's are hopeful that DHS will take advantage of this expertise, rather than "reinventing the wheel."

8. Many emphasized the importance of a performance-based qualifications system as the foundation for determining team membership. They include formal training requirements, on-the-job training and experience, and mentorship in such a system.

9. There is general consensus that training, qualifications, and performance standards particular to all-risk environments should be developed to enhance (not supercede) existing wildland firefighting guidelines in these areas.

10. IMT members agree that jurisdictional protectiveness (so-called "turf battles") often hamper the ability of all agencies involved to accomplish the mission. A key skill of IMT's is to be able to mitigate such conflicts.

Organization of the report

Following this executive summary, Section II of this report explains the history of and motivation for this project, and lays out the analytic objectives at hand. Then, Section III explains the data collection and analytic methods employed, which are further detailed in the appendices. Next, Section IV describes the environment of incident management in the wildland fire service. Section V presents the significant findings of this study with respect to management and operations. Following the conclusion of the report are a series of appendices that present data to substantiate the discussion in Sections IV and V.

I.   INTRODUCTION

This assessment of the capacity of current Incident Management Teams (IMT's) to respond to future homeland security missions is offered in response to a request from the Texas Forest Service with the sponsorship of the U.S. Forest Service Region 8 and the Federal Emergency Management Agency Region VI.

Motivation for this project

The events of September 11, 2001 changed the policy environment of the United States government with regard to the prevention and mitigation of terrorism, and focused substantial public attention on the issue of how the United States should protect itself from terrorist attack. The President has directed all federal agencies to support Homeland Security efforts. It is therefore compelling for government agencies to consider what resources and expertise they have to bring to bear. This project derives its motivation from this charge.

The project is further prompted by the space shuttle Columbia recovery effort that took place in East Texas and Louisiana from February 2 through May 10, 2003. Twenty-one IMT's and 597 crews from the wildland fire service performed a central response role in the operation by conducting a ground search of 680,000 acres. The Columbia recovery operation was one of the largest in history, and it coincides with one of the most significant government reorganizations in history: the creation of the new Department of Homeland Security (DHS).

The Department's mission is to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur. To meet this mission, the Department is currently revising its National Response Plan (NRP) and developing a National Incident Management System (NIMS). The purpose of this project is to systematically capture and articulate the lessons that IMT's have learned about incident management from the Columbia operation and their many other response experiences, and to make those lessons available to DHS, the agencies that constitute the wildland fire service, and the broader public safety community.

Objectives of this analysis

This survey project is designed to draw on the broad experiences of the IMT's that participated in the Columbia shuttle recovery to inform the future of inter-agency, intergovernmental all-risk incident management. In support of this focus, this study has two main objectives:

1. To obtain an assessment of IMT capacity for all-risk response using a systematic method, including characterizing the strengths of IMT's and identifying the constraints they face.

2. To provide specific, actionable information that DHS, the natural resource agencies, and state and local governments can use as they determine how best to manage the incidents they confront.

General study method and scope

This report represents the result of a five-month assessment designed to fulfill these objectives. Data were gathered from four sources: existing documentation of missions and operations of natural resources agencies at the federal and state level; individual interviews and informal discussions with IMT members; large group discussions with IMT members; and written surveys of IMT members.

These activities were carried out by Dr. Amy Donahue, the principal investigator for this effort and a researcher at the University of Connecticut, and by the Texas Forest Service, the project director. This report presents the findings of the data analysis effort. Its scope is to provide insight by systematically identifying and representing the opinions and recommendations of the IMT members that were involved in the study. It characterizes the degree of consensus among the respondents about various views. It does not advocate a particular position or make independent recommendations.

II.   STUDY METHODOLOGY

This section describes the focus, questions, and analytic methods that underpin this investigation.

Focus

The focus of this project is incident management, a crucial dimension of homeland security policy at all levels of government. Incident management refers to the collection of command and control activities exercised to prepare and execute plans and orders designed to mitigate the effects of an emergency event. It is usually effected through a functionally-oriented incident command system (ICS) that can be tailored to the type, scope, scale, complexity, and management needs of the incident. ICS is employed to organize and unify multiple disciplines, jurisdictions, and responsibilities on-scene under one functional organization. ICS may include adoption of a formal Unified Command, a multi-agency governance structure that incorporates officials from agencies with jurisdictional or functional responsibility at the incident scene and allows them to jointly provide management and direction within a commonly conceived set of incident objectives and strategies. ICS is described more fully in Appendix 1.

In particular, this project concerns the management of all types of emergency incidents, including natural and human-caused. The term commonly used to describe this breadth of incidents is "all-risk." While definitions of this term vary, it is broadly accepted that all-risk incidents usually have the following characteristics:

- Active threats exist such that action is warranted to save lives or protect property
- Extensive planning and operational control are required to mitigate them
- They tend to be dynamic and rapidly changing
- They are broad in scale, scope, and/or complexity

Research questions

Given the objectives and focus articulated above, this study asks four primary research questions:

1. What are the major lessons of the Columbia shuttle recovery operation?

2. What is the capacity of existing wildland IMT's for all-risk response?

3. What are the characteristics of successful incident management?

4. What should DHS consider as it develops and deploys incident management systems?

Data collection and analysis methodology

The array of analytic objectives described in the preceding sections, and the desire to capture the expertise and insight of the individual members of several incident management teams, warrant a multi-perspective, multi-method data collection and analysis effort. This section describes the instruments and analytic techniques employed during this project.

Preliminary meetings

Twenty-one IMT's participated in the Columbia operation (9 Type-1, 11 Type-2, and 1 ad hoc team), each for approximately two weeks. These teams comprised a sample of convenience of the entire population of 51 Type-1 and Type-2 IMT's currently available in the wildland fire service. All involved recognized that the scope and scale of the Columbia operation could be replicated by a terrorist attack and were interested in how the lessons of Columbia could be translated and transferred to coincident work by the Homeland Security Council staff and DHS to develop the new NRP and NIMS, and also how they could be communicated to the federal and state natural resources agencies who determine when, why, and where to deploy IMT's. Therefore while these teams were on scene, the project director and principal investigator often met informally met with team members to help develop a conceptual framework for identifying and articulating relevant lessons. These meetings formed the basis for subsequent survey activities and a formal conference.

Pilot survey

A written survey was distributed to all members of the Incident Management Teams involved in the Columbia recovery operation. This instrument was configured as an exit survey, designed to provide feedback to the Texas Forest Service, which served the state area command function for the incident. The survey included several questions pertinent to the research questions of interest here, however. These questions were:

- Was the team comfortable accepting an all-risk assignment?
- Did you encounter challenges that were unique to this all-risk incident that you would not expect to encounter on a wildfire?
- Do you feel like the requirements of the incident were within the capabilities/experience level of your team?
- Did you receive adequate support from supporting agencies (EPA, FEMA, etc.)? If not, what additional support was needed?
- Were you clear on the roles of supporting agencies?
- Were you able to incorporate the supporting agencies into your ICS structure?
- Did you implement unified command with any entities/agencies?
- Did you experience any difficulties with other agencies recognizing your command authority?
- Were you clear on your fiscal responsibilities and the responsibilities of the other agencies?
- Were there safety concerns that you don't normally experience on a wildfire? Did the supporting agencies (EPA, NASA, FEMA) provide enough safety guidance?
- Were your ordering procedures clear and effective?
- Was logistical support sufficient?
- What were the units that were most affected by this all-risk incident?
- Were you provided with adequate information to do your job? What do you recommend on future all-risk incidents?
- Would national training in all-risk response enhance the abilities of IMT's to respond to all-risk incidents in the future?

Respondents completed the survey on scene before demobilizing, and all surveys distributed were returned. Each team compiled their own survey response, so the form of the responses varied: some teams included all individual responses from contributing members, while others presented a summary document. Responses to the questions listed above and other comments provided throughout the survey response were reviewed by four independent raters to extract a set of statements that captured the range of opinion across all respondents. These were compiled into a single database of comments, redundancies were eliminated, and the comments were used as part of the Q methodology exercise described below.

Full-day conference

The centerpiece of the data-gathering effort was a one-day conference in which two or three representatives from each of the 21 IMT's from Columbia participated, for a total of 59 participants. All were key command and general staff members. There were also representatives from the U.S. Forest Service present, including three retired members of the fire service's incident management system who had participated in the Columbia operation (the so-called "gray team"). The conference included four sessions, one dedicated to each of the four research questions enumerated above. All attendees participated in all four sessions, except for two who were mobilized and had to leave mid-day. Sessions involved facilitated group discussion. Sessions were recorded on audio tape, and two note-takers independently transcribed the discussion. In addition, to ensure that participants who did not have an opportunity to make all of their comments during the group discussion, or who felt uncomfortable doing so, were able to contribute their inputs, participants were invited to provide additional comments to the note-takers that were then integrated into the written record.

Q-Methodology

Given that the existing wildland IMT's are being used to respond to many kinds of hazards, and in light of emerging homeland security response requirements, a central topic of interest in this study is the capacity of the existing wildland teams to manage all-risk responses. Valid objective measurement of this capacity would entail a substantial research effort. In the near term, though, it is valuable to query the IMT's to obtain their perspective on this issue. An assessment of their subjective opinions is likely to yield important insights if it is conducted systematically and with minimum bias imposed by the investigator.

Thus, in order to measure how the members of the IMT's feel about their capacity for all-risk response, a technique that facilitates methodical study of human subjectivity is required. The method chosen for this study was Q-methodology, which uses factor analysis to identify patterns of viewpoints across individuals, and allows the researcher to construct typologies of values or perceptions. The first step in this method is to specify the range of opinion about the topic of interest. The variety of relevant beliefs is captured in a series of opinion statements. The participants then complete an exercise in which they systematically rank-order the statements according to the extent to which they agree or disagree with them. Finally, the Q-factor analytic method is applied to these rankings to determine the extent to which respondents can be grouped around common beliefs or consensus about the statements. Appendix 2 explains this methodology in detail. Appendix 3 presents the results.

This technique offers several important advantages to this study: First, it allows a large number of respondents to communicate their opinion about a large number of points. Second, it facilitates correlation of these respondents to see where areas of consensus and disagreement lie, thereby signaling potential opportunities and problems for future reform efforts. Third, it is non-deterministic–that is, respondents are not constrained by some *a priori* structure or scale of opinion about the topic under investigation (as there are approximately 8×10^{47} possible ways of rank ordering the statements). Finally, it promotes much more systematic investigation and characterization of opinions and perspectives than does interviewing alone.

In this study, a naturalistic sample of statements was derived from the participants themselves. A base set of statements was first obtained from the pilot surveys (described above). Then, during the morning session of the conference, the participants were asked to consider the question: "What are the most important things the wildland fire service should consider in its decision-making about the use of IMT's for all-risk response?" They were encouraged to think broadly about their team's capabilities and limitations, opportunities and constraints faced by their team, and internal and external conditions that either enable or hinder the team.

The participants were asked privately to write down a series of statements that captured their most important views. Then, in the group forum, participants were asked to nominate candidate statements. Other participants commented on each statement and they were modified until all in the room concurred that the statements accurately represented the issues in question. Note, however, that participants could freely agree or disagree with any statement–the point of the exercise was to ensure that the concept was characterized in a way that garnered the common understanding of all participants. The statements generated during the session were combined with those derived from the pilot survey, and redundancies were eliminated, to arrive at a final sample of forty statements. This approach of having the participants generate the statements has the key advantages that the participants understand what the statements mean, and that all statements that the participants think are relevant can be included.

Written Surveys

Members of the incident management teams were also asked to complete three short written questionnaires on site during the one-day conference:

1. The first simply asked participants to confer with the other two representatives present from their teams to compile a list of the most important characteristics of successful incident management. These responses were used as the basis for the afternoon sessions. The responses provided by the teams are discussed in Section III, below, and reported in full in Appendix 4.

2. The second questionnaire asked participants to examine the statements from the Q-sort that they agreed and disagreed with most strongly, and to provide a short narrative that explains why. The responses provided by the participants are discussed in Section III, below, and reported in Appendices 3d and 3e.

3. The third questionnaire asked participants to answer several questions about their demographic characteristics, experience, and training. The responses provided by the

participants are discussed in Section III, below, and reported in Appendix 3c. Response rate on all three instruments was 100 percent of those present.

<u>Archival documents</u>

In addition to the primary data gathered through interviews, surveys, and the conference, several documents were reviewed, including:

- Federal Response Plan

- Federal Wildland Fire Policy

- "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy"

- NASF Task Force report (1999). "Fire and Ice: The Roles of State and Federal Forestry Agencies in Disaster Management and Response."

- The National Fire Plan ("Managing the Impact of Wildfires on Communities and the Environment")

- Interagency Incident Business Management Handbook

III. THE RESPONSE SETTING

This section describes the environment of incident management. It identifies the major federal and state agencies and professional associations involved in the wildland fire service to provide an institutional context for considering the capacity and utilization of IMT's. It also discusses incident management and command generally. Finally, it provides a synopsis of the space shuttle Columbia incident to set the stage for the findings reported in the next section.

Key system dimensions

This study asks participating IMT members to express and explain their views of incident management. To help characterize and contextualize the opportunities and constraints inherent in incident management, it is useful to describe key dimensions of the service delivery system:

Public Policy. In this case, the precipitating policy concern is the development of homeland security as an area of significant public interest and government activity that has been accompanied by dramatic reorganization, substantial reallocation of resources, and the creation of new infrastructure at all levels of government. At the federal level, the president's *National Strategy for Homeland Security* specifies six broad areas of activity, including Emergency Preparedness and Response (EP&R). With regard to EP&R, the National Strategy envisions a comprehensive national system to bring together and coordinate all necessary response assets quickly and effectively. The government must plan, equip, train and exercise many different response units to mobilize without warning for any emergency. Consistent with this vision, HSPD-5 "Management of Domestic Incidents" directs DHS to integrate existing federal-level response plans and to build a national system for incident management in cooperation with state and local government.

Service environment. The production of public services can be thought of as having two stages: the transformation of inputs into outputs, where agencies choose and deploy a mix of human and capital resources to carry out various activities, and the transformation of outputs into outcomes, where environmental conditions influence the nature of the final result of these activities as experienced by service recipients. In other words, external conditions may affect how the emergency response capabilities are designed, how they operate, and how successful their operations are in keeping the public, its property, and its resources safe. For all-risk incident management and wildland firefighting, the contextual contingencies that affect service delivery are well documented in both the professional and academic literature. In general terms, economic, physical, demographic, political, and social aspects of the jurisdictions in which protection activities are carried out ultimately determine the nature of public safety outcomes.

Service demand, level, and quality. Service level and quality objectives in the public sector are largely a function of what citizens want, as voiced through a political choice process and ultimately contained in the public budget. Direct assessments of service quality are beyond the scope of this project, but an important consideration when examining the relationship of incident management and all-risk response is the nature and level of debate about the appropriate utilization of the existing wildland IMT's. Citizen preferences about the suppression of wildfires have been given voice in the missions of the natural resources agencies, which have developed

and deployed IMT's to fulfill this mandate over the past three decades. As the success of IMT's has grown and become recognized, they have been called to support emergency operations well beyond wildland fire suppression, including natural disasters and human-caused incidents.[1]

Organizational structure. The notion of structure forms much of the core conceptual basis for the study of organizations. By structure, theorists refer to the arrangement of operational units within an organization, the allocation of power and discretion amongst these units, and the rules that govern the exercise of authority. Structure lends coherence to the pursuit of collective action in several ways: It facilitates the accomplishment of primary work, it induces individuals to conform their activities to the satisfaction of organizational objectives, and it bounds the terrain and population within which authority is exercised to concert action. Empirical studies that evaluate the impact of various organizational forms indicate that organizational design (decision-making that defines structure) is directly relevant to policy outcomes. In this study, the key structure at hand is the episodic creation of a unified incident command arrangement to address a particular incident. A unified command is a team arrangement that allows all entities with responsibility for an incident to jointly provide direction through a common set of incident objectives and strategies. Though such structures are ephemeral (that is, they last only for the duration of the incident), they are repeatedly created according to a set of carefully crafted guidelines that allow each incident command structure to be stable and predictable, even as it is flexible and tailored to the incident at hand.

Leadership. Related to organizational structure is governance, which includes the formal locus of decision-making authority, the mechanisms by which decisions are made, and the people who make them. In particular, some members of an organization or set of organizations are vested with decision-making authority with respect to activities such as establishing policy, allocating financial resources, supervising members and employees, and deploying organizational resources to generate service outputs. In short, leaders are charged with acquiring, arranging, deploying, directing, and coordinating resources in a way that makes the organization's strategic objectives operative. This job makes three key demands on them: First, they must obtain, maintain, and sustain the organization's resource base. Second, they must create an organizational structure that defines the relationships among the resources and facilitates communication of information. Third, they must motivate individuals to provide essential services that will achieve organizational objectives by prescribing and providing incentives for appropriate behavior. In this study, important leaders exist in the state and federal natural resources agencies, in other local, state, and federal agencies, in the IMT's themselves, and in consortia and associations in which these agencies cooperate.

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[1] An incident is an occurrence, either human caused or by natural phenomena, that requires action by emergency service personnel to prevent or minimize loss of life or damage to property and/or natural resources. Teams included in this study report that they have been employed at hurricanes, earthquakes, floods, tornados, volcanoes, snow and ice storms, breached dams, train derailments, chemical spills, refinery fires, oil spills, explosions, and riots, as well as to help contain New Castle disease and Asian Gypsy Moths and the Asian Flu. They have supported major civic events, such as Presidential visits and community planning efforts. They responded to the Oklahoma City bombing, the World Trade Center attack, and most recently, the loss of space shuttle Columbia.

Management systems. The administration of an organization's production technology is commonly facilitated by distinct sets of administrative procedures that support managerial decision-making by allowing a leaders and managers to communicate performance standards, to collect information on organizational performance, to coordinate routine activities, and to control the acquisition and use of resources. The main purposes of management system are feedback (the systems provide information about organizational activities that managers can use to make subsequent decisions) and accountability (the systems ensure resources are used in a manner consistent with the public interest). Common management systems include budget and financial management procedures, personnel policies, and training programs –for example, the wildland fire service codifies its many of its habitual management systems in the National Wildfire Coordinating Group's *Interagency Incident Business Management Handbook*. Management systems like these facilitate–and indeed are entangled with–operational decision-making.

Resources. It is often said that "fires aren't put out with water; they're put out with money." Incident mitigation is labor- and capital-intensive, and a defense against hazards must be maintained continuously, so wildland firefighting and all-risk responses are costly. The provision of such protection services raises significant public finance policy concerns, and increasingly holds political salience as citizens resist rising taxes. There is therefore great interest in promoting efficient resource allocation, and in deriving as much service output as possible from wildland fire service resources, both physical and human. In an environment of scarce resources, it is important to recognize the tradeoffs in the services citizens receive as choices are made about the incidents to which IMT's will be deployed. This is a question about which a range of opinion exists, from the assertion that IMT's should be dedicated only to wildland firefighting to the belief that they are the appropriate resource to employ for managing responses to all types of hazards. This study will not resolve this question, but it will illuminate some important considerations of which decision-makers should be aware.

Stakeholders. Several sets of actors contribute to and/or have interest in the outcomes of any emergency services system. A stakeholder is a person or formal or informal group of people who share some identifiable interest in common, provide something of importance to the organization, and expect something in return. They may be within or outside of the agencies in question. The expertise, abilities, views, resources, political access and resulting actions of these stakeholders bear on the efficacy of the system, but in public service contexts, it can be difficult to determine who the stakeholders are and how powerful their desires and influence are. Moreover, the views of stakeholders are very disparate, and it is hard for agencies to know how to respond appropriately. In such cases, stakeholder analysis can be a useful tool that can help decision-makers identify the people, groups, and institutions that have interests at stake, resolve competing interests, allocate limited resources, and balance stakeholder needs.

The broader context of the wildland fire service

The wildland fire service is a diverse community comprised of federal natural resource agencies, state forest service agencies, and local agencies. Among other resource management missions, these agencies are charged with the protection of life, property, and resources from undesired destruction by fire, which requires implementation of a sophisticated set of fire management activities, including those that are most visible to the public, fire prevention and fire suppression.

The demands on the wildland fire service are extensive and expensive: The average number of fires for the past decade is more than 100,000 per year, burning an average of over 4,200,000 acres annually. In addition to the damage to natural resources, wildfires can impinge on urban areas. For example, in 2002, 815 structures burned. Apart from the economic costs, the estimated cost of fire suppression operations in 2002 was $1.6 billion.[2]

Over the past several years, the fire service has been driven to adapt both its focus and operations. With regard to service requirements, wildland fire agencies are now called to do much more than simply putting out fires. They are engaged in activities that range from hazardous materials management to emergency medical response to building inspections to arson counseling to water rescue–and they still provide non-emergency services. These enhanced responsibilities flow from three main sources: citizen expectations, government regulations, and the physical environment.

Thanks to the activities of regulatory agencies, special interest groups, and the media, the public generally has higher expectations both of environmental and natural resources agencies and of emergency services agencies than was true even a few years ago. Real-time news events, such as the broadcast of the bombing of the federal building in Oklahoma City, elevate citizen awareness of and concern about existing threats. Real-life television programs and prime time shows about public safety raise people's expectations about the quality of service they will receive from fire departments and other emergency service providers. On top of public perceptions, the service has also had to satisfy a plethora of new standards and regulations pertaining to operations and training promulgated by diverse authorities, including legislation such as the Fair Labor Standards Act, agencies such as FEMA and the Occupational Safety and Health Administration (OSHA), state emergency management and other offices, and private organizations such as the NFPA, NEMA, and the International Association of Fire Chiefs (IAFC), to name a few.

The federal natural resource agencies

US Forest Service[3]

The U.S. Department of Agriculture's Forest Service (USFS) manages a collection of over 190 million acres of public lands in national forests and grasslands in 44 States, Puerto Rico, and the Virgin Islands with a workforce of 30,000 people. The mission of the USFS is "to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations." The USFS accomplishes its mission through five main activities: 1. protection and management of natural resources; 2. forestry research; 3. community assistance and cooperation with State and local governments and agencies, forest industries, and private landowners; 4. forest service workforce management; and 5. international assistance in global forest policy.

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[2]   Figures reported by the National Interagency Fire Center.

[3]   Adapted from information posted at http://www.fs.fed.us/aboutus/meetfs.shtml.

Congress established the USFS in 1905 to provide quality water and timber for the nation. Over the years, Congress has expanded the agency's responsibilities to include managing national forests for multiple uses and for the sustained yield of renewable resources such as water, forage, wildlife, wood, and recreation. The USFS' key objective is to balance resource utilization, productivity, and environmental protection. It is also the largest forestry research organization in the world, and provides technical and financial assistance to state agencies and private forestry organizations through a network of forest and range experiment stations and the Forest Products Laboratory.

The Forest Service cooperates with State and local governments, forest industries, other private landowners and forest users in the management, protection, and development of forest land in non-Federal ownership. Activities include cooperation in urban interface fire management and urban forestry. State and Private Forestry works through the regional offices and through a special Northeastern Area office to provide these services. To accomplish its mission and these functions, the USFS works through four levels of national forest offices:

- *Ranger Districts (>600)*: Constructs and maintains trails, operates campgrounds, and manages vegetation and wildlife habitat.

- *National Forests (155)*: Coordinates activities between districts, allocates the budget, and provides technical support to each district.

- *Region (9)*: Coordinates activities between national forests, monitors activities on national forests to ensure quality operations, provides guidance for forest plans, and allocates budgets to the forests.

- *National Level*: Provides broad policy and direction for the agency, works with the president's administration to develop a budget to submit to Congress, provides information to Congress on accomplishments, and monitors activities of the agency.

National Parks Service[4]

In 1916, President Woodrow Wilson signed the law that created the National Park Service (NPA) in the Department of the Interior (DOI) to unify management and protection of the forty national parks and monuments then in existence and those yet to be established. The mission of the NPS is "to preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations." The NPS also fills many other roles, including acting as guardian of the nation's diverse cultural and recreational resources; environmental advocate; world leader in the parks and preservation community; and pioneer in the drive to protect America's open space.

The National Park System of the United States comprises 384 natural, historical, and recreational areas covering more than 83 million acres in 49 States, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands. These areas are of such national

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[4]   Adapted from information posted at www.nps.gov.

significance as to justify special recognition and protection in accordance with various acts of Congress. They are used by over 250 million visitors annually.

US Fish and Wildlife Service[5]

The United States Fish & Wildlife Service (USFWS) is also a bureau within the Department of the Interior whose mission is, "working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." Its key functions include enforcing Federal wildlife laws, protecting endangered species, managing migratory birds, restoring nationally significant fisheries, conserving and restoring wildlife habitat, and helping foreign governments with their international conservation efforts. It also oversees the federal aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to State fish and wildlife agencies. The service manages the 93 million-acre National Wildlife Refuge System of more than 520 National Wildlife Refuges and thousands of small wetlands and other special management areas. Under the fisheries program it also operates 66 national fish hatcheries, 64 fishery resource offices, and 78 ecological services field stations.

Bureau of Indian Affairs[6]

The Bureau of Indian Affairs (BIA), an agency within the DOI, was created in 1824 to administer and manage 55.7 million acres of land held in trust by the United States for American Indians, Indian tribes, and Alaska Natives. This responsibility includes developing forestlands, leasing assets on these lands, directing agricultural programs, protecting water and land rights, developing and maintaining infrastructure, providing for health and human services, and economic development. The Bureau facilitates the government-to-government relationships between the United States and the 562 federally recognized tribal nations.

Bureau of Land Management[7]

The Bureau of Land Management (BLM), an agency within the DOI, administers 262 million acres of America's public lands, and a total of about 700 million acres of subsurface minerals, located primarily in 12 Western States. Most of the lands are dominated by extensive grasslands, forests, high mountains, arctic tundra, and deserts. The BLM manages a wide variety of resources and uses, including energy and minerals; timber; forage; wild horse and burro populations; fish and wildlife habitat; wilderness areas; archaeological, paleontological, and historical sites; and other natural heritage values. BLM's mission is "to sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations."

Increasingly, the BLM has had to address the needs of a growing and changing West. Ten of the 12 western States with significant proportions of BLM-managed lands have among the fastest

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[5]   Adapted from information posted at www.fws.gov.

[6]   Adapted from information posted at http://www.doiu.nbc.gov/orientation/bia2.cfm.

[7]   Adapted from information posted at http://www.doiu.nbc.gov/orientation/blm2.cfm and http://www.blm.gov.

rates of population growth in the United States. The BLM's task is to recognize the diverse demands of public land users (including conservation, environmental management, recreation, and tourism) while addressing the needs of traditional user groups (including grazing, timber production, and mining) and working within smaller budgets.

National Wildfire Coordinating Group[8]

The National Wildfire Coordinating Group (NWCG) is made up of the USFS, four Department of the Interior agencies (BLM, NPS, BIA, USFWS), and State forestry agencies through the National Association of State Foresters. The purpose of NWCG is to coordinate programs of the participating wildfire management agencies to help avoid duplication and to provide a means of cooperation. Its goal is to provide more effective execution of each agency's fire management program.

The NWCG is mostly comprised of staff leaders in agency programs who have a substantial influence on agency policy and program funding. The group provides a formalized consensus standards system for training, equipment, qualifications, and other functions. Agreed-upon policies, standards, and procedures are implemented directly through regular agency channels. The NWCG operates through thirteen interagency, geographically distributed working teams that serve as a means for the exchange of knowledge about all dimensions of fire management.

State and Local entities[9]

State and local activities are facilitated across the nation by state foresters, who participate in the National Association of State Foresters, a non-profit organization that represents the directors of the State Forestry agencies from all fifty states, eight U.S. territories (American Samoa, the Federated States of Micronesia, Guam, the Northern Marianas Islands, Palau, Puerto Rico, Republic of the Marshall Islands, and the U.S. Virgin Islands), and the District of Columbia. The State Foresters provide management assistance and protection services for over two-thirds of the nation's forests.

Assistance to Private Landowners

The NASF works closely with the nearly ten million non-industrial private forest (NIPF) landowners, private forest lands provide over seventy percent of the nation's wood supply, and contribute to numerous other public benefits such as clean air, clean water, healthy wildlife habitats, and outdoor recreation. The NASF provides technical, educational, and financial assistance these landowners achieve their objectives in an environmentally beneficial way.

Natural Resource Protection and Education

In addition to helping landowners, State forestry agencies also leverage State and local resources to develop urban and community forestry programs and to help protect all forests from wildfire,

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8   Adapted from information posted at www.nwcg.gov/nwcg_admin/organize.htm.

9   Adapted from information posted at www.stateforesters.org.

destructive pests, and diseases. The State Foresters deliver many of these programs in cooperation with Federal agencies such as the USFS and Natural Resources Conservation Service.

<u>Role in Emergency Response</u>[10]

As noted above, forestry agencies, traditionally dedicated to wildland firefighting, have recently been called upon to respond to non-fire disasters such as floods, hurricanes, winter storms, and tornadoes. Moreover, state emergency management agencies (SEMA's) and the Federal Emergency Management Agency (FEMA) have recognized the training, experience, and numbers of state forestry employees and have been increasingly inclined to mobilize them for a variety of incidents. According to the NASF, both the NASF and FEMA have recognized that as forestry agencies have assumed broader responsibilities, communication and the coordination of response activities has become more difficult. NASF, with encouragement and strong support from FEMA and the USFS, assigned a Task Force to identify the concerns of forestry agencies and to find possible solutions to problems. The Task Force's made recommendations in a September, 1999 report "Fire and Ice: The Roles of State and Federal Forestry Agencies in Disaster Management and Response" that include:

- Using the Forest Service to facilitate state forestry agency participation, FEMA should ensure that the Fire Suppression Assistance Program guidelines are understood and applied consistently to all fire incidents.

- State forestry agencies should improve cooperative agreements to allow local fire and emergency agency response organizations to be reimbursed.

- State forestry agencies and SEMA's should work together to understand better the roles, responsibilities, and operational procedures of the agencies at all jurisdictional levels that are involved in disaster and emergency responses.

- To establish better response coordination and clear roles for all types of emergencies, FEMA and SEMA's should apply the Incident Command System across all jurisdictions; jointly conduct annual simulations of disasters, including emergency support functions and state forestry agencies; and seek to assure compatible radio systems communications within states in cooperation with all Federal, state, and local partners.

- NASF, in coordination with the National Emergency Management Association (NEMA), should be engaged in legislation and policy development related to wildfire and non-fire emergencies.

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[10] From "Fire and Ice: The Roles of State and Federal Forestry Agencies in Disaster Management and Response," available at www.stateforesters.org/reports/Fire&Ice.

Incident Management

Federal Response Plan

The Federal Response Plan (FRP), developed by 26 Federal Agencies and the American Red Cross, identifies overall responsibility for crisis management (for which the Federal Bureau of Investigation is designated as the Lead Federal Agency) and consequence management (for which FEMA is the Lead Federal Agency). Importantly, the FRP specifies the concept of operations for presidentially-declared disasters. The FRP also identifies the federal wildland agencies' responsibilities for Emergency Support Function 4 (ESF-4), firefighting; and for 11 other ESF's for which the wildland agencies have support responsibilities. The new Department of Homeland Security (DHS) is currently drafting a new National Response Plan (NRP) designed to meet the mandates of HSPD-5 (Management of Domestic Incidents). The NRP will soon coordinate all existing federal response plans and will supercede the FRP. While the existing ESF structure and configuration may not be retained in the NRP, it is expected that the wildland fire service will be expected to continue to fulfill many of its exiting missions and support roles.

Geographic Area Coordination Center[11]

A wildland fire is initially managed by the local agency that has fire protection responsibility for that area. Various local agencies may work together, sharing personnel and equipment, to fight new fires and those that escape initial action. These organizations typically employ engines, ground crews, smokejumpers, helicopters with water buckets, and air tankers for initial suppression. If a wildland fire grows to the point where local personnel and equipment are not enough, the responsible agency contacts the Geographic Area Coordination Center (GACC) for help. The GACC locates and dispatches additional firefighters and support personnel throughout the geographic area. The GACC will coordinate ordering with local unit dispatch centers, Regional Operations Centers (ROC), and Disaster Field Offices (DFO's), as appropriate. In some cases, the capacity of the GACC to meet resource needs is outstripped because it is supporting multiple incidents, its resources are fully committed, or resources are unavailable because of competition with other geographic areas. In these cases, requests for resources are referred to the National Interagency Coordination Center (NICC).

National Interagency Fire Center[12]

The National Interagency Fire Center (NIFC) is a partnership of federal agencies with wildland fire responsibilities located at Boise, Idaho. The Bureau of Land Management serves as the host bureau for the National Park Service, Bureau of Indian Affairs and the US Fish and Wildlife Service. The USFS, the National Weather Service (Department of Commerce), the Office of Aircraft Services (Department of Interior), and NASF are also represented at NIFC.

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[11]   Adapted from information posted at www.nifc.gov.

[12]   Adapted from information posted at www.nifc.gov and in the National Interagency Mobilization Guide.

A major operation at the NIFC is the National Interagency Coordination Center (NICC), the mission of which is "the cost effective and timely coordination of land management agency emergency response for wildland fire." This mission is accomplished through planning, situation monitoring, and expediting resource orders between the NIFC agencies, the NASF, the USFS regions, and the FEMA regions. The National Interagency Mobilization Guide identifies standard procedures which guide the operations of multi-agency logistical support activity throughout the coordination system. This Guide is intended to facilitate cost effective interagency dispatch coordination. When competition for resources between geographic areas occurs, the National Multi- Agency Coordination Group (NMAC) at NIFC will establish priorities. In most cases, federal agencies, when requested to support the FRP, will provide base eight salary for permanent employees. FEMA will reimburse overtime, travel, and per diem costs for all employees. Base eight salary will be reimbursed for temporary, Administratively Determined (hourly, locally variable), and state employees mobilized to assist.

Incident Management Teams[13]

In the United States there are two types of IMT's distributed across the nation. There are sixteen National Interagency Incident Management Teams that are categorized as Type-1. There are approximately 35 Type-2 Incident Management Teams nationwide. Both types of teams are strategically located, with a majority of these teams in the eleven western states, which are more prone to wildland fires that require IMT's. These teams consist of members from a wide variety of federal, state, county, and local agencies. There are 21 state and numerous local government IMT's throughout the nation rated Type-1 by their own agencies; however, only the sixteen National IMT's are nationally recognized for "all-risk" Type-1 incidents. There are also Type-3 teams, that are usually locally established and staffed, and are designed to handle small incidents.

Both Type-1 and Type-2 teams are managed on a rotational basis year long through the nine Geographical Areas (shown in Appendix 1c). The sixteen Type-1 IMT's in the national rotation schedule are distributed as follows:

Northern Rockies	2	California	5
Rocky Mountain	1	Northwest	2
Southwest	2	Alaska	1
Great Basin	2	Southern Area	1

Type-1 teams represent the highest level of incident management expertise in the nation; they participate in a national rotation and may be mobilized to any kind of incident. Normally they are ordered and assigned to high complexity incidents involving multiple agencies or jurisdictions, complex logistical support needs over extended duration, high-level political involvement, and high risks to resources, public safety, or life and property. Type-1 teams are staffed to be fully functional in all ICS sections, have expertise to manage complex air operations, and can expand to support numerous branches, divisions, and groups for extended periods of time. As a general

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[13]   Thanks to Geoff Wilford, Battalion Chief, Kern County Fire Department, for providing this synopsis.

rule, Type-1 IMT's manage large incidents with over 500 people assigned and address the most complicated logistical, fiscal, planning, operational and safety issues. The Command and General Staff on National Teams must successfully complete Advanced Incident Management training at the National Advanced Resource Technology Center in Marana Arizona before participating on these teams.

Type-2 IMT's are staffed to manage incidents complex enough to exceed the capabilities of a Type-3 (local) team, but of less complexity than would require a Type-1 team. All ICS Command and General positions are staffed, but management experience is generally less than Type-1 teams. They are best used for short duration incidents, less complex incidents, or incidents that are not the highest priority. Type-2 Teams generally manage less than 500 people, with less complicated management structures.

Incident Command System[14]

Managing emergency incidents like wildland fires can be complex, confusing, and inefficient, because multiple agencies at the Federal, state and local levels are trying to work with each other in an urgent situation. The single standard Incident Management System (ICS) was developed in the United States almost 30 years ago, and it has been imitated by emergency response organizations around the world.

ICS resulted from the obvious need for a new approach to the problem of managing rapidly moving wildfires in the early 1970's. At that time, too many people reported to one supervisor, different emergency response organizational structures were used, incident information was lacking or unreliable, radio systems were inadequate and incompatible, coordinated planning between agencies was rare, terminology differed between agencies, lines of authority were unclear, and incident objectives were often unclear or unspecified.

Designing a standardized emergency management system to remedy the problems listed above took several years and extensive field-testing. The Incident Command System was developed by an interagency task force working in a cooperative local, state, and federal interagency effort called FIRESCOPE (Firefighting Resources of California Organized for Potential Emergencies). Early in the development process, four essential requirements became clear:

1. The system must be organizationally flexible to meet the needs of incidents of any kind and size.

2. Agencies must be able to use the system on a day-to-day basis for routine situations as well as for major emergencies.

3. The system must be sufficiently standard to allow personnel from a variety of agencies and diverse geographic locations to rapidly meld into a common management structure.

4. The system must be cost effective.

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[14] Prepared by the National Interagency Fire Center External Affairs Office.

The ICS organization today develops around five major functions that are required on any incident whether it is large or small. ICS establishes lines of supervisory authority and formal reporting relationships. There is complete unity of command as each position and person within the system has a designated supervisor. Direction and supervision follows established organizational lines at all times. The major responsibilities and duties of all ICS positions are show in Appendix 1. Individual agencies may have additional responsibilities and more detailed lists of duties.

The Space Shuttle Columbia Recovery Operation

On January 16, 2003, the Space Shuttle Columbia and her crew of seven launched on the 113th shuttle flight from the Kennedy Space Center in Florida to begin a sixteen-day scientific research mission. On February 1, 2003, Columbia broke up upon re-entry over the western United States at an altitude of 200,000 feet and a speed of Mach 18. The break up resulted in a debris field that extended approximately 250 miles from near Dallas, Texas to Fort Polk, Louisiana. The hazardous nature of the shuttle material, the imperative to recover Columbia's crew, and the criticality of evidence to the investigation of the cause of this tragic accident prompted a substantial intergovernmental, interagency response. Over the 100 days that followed, over 450 government agencies, private companies, and nonprofit organizations and 25,000 people would participate in what became the largest search and recovery effort in history.

On February 2nd, FEMA and NASA agreed that the mission of the response would include four primary goals: 1. Protect the public, 2. Recover the crew, 3. Retrieve the evidence, and 4. Provide public assistance (i.e. financial assistance to local governments). To meet these goals, the operation proceeded in two discernable phases. The first phase began on February 1st, when the shuttle broke up, and continued until February 14th, when the crew had been recovered. During this phase a large number of local citizens and responders (many of whom were volunteers), the Texas Forest Service, the Texas department of Public Safety, the Texas Army National Guard, USFS, and many other agencies cooperated with NASA and the EPA to mitigate known hazards from material that had fallen in public areas and to search for the crew.

After the immediate public hazards were mitigated and the crew were recovered, attention turned to the retrieval of the evidence necessary to support the independent Columbia Accident Investigation Board's (CAIB's) determination of the cause of the accident. The second phase involved comprehensive searches on the ground, by air, and under water to find and retrieve shuttle material. This ground and air searches were directed by the NASA Mishap Investigation Board and conducted by the wildland fire service, which was activated under ESF-4 of the FRP. The Texas Forest Service fulfilled the role of state area command, and delegated authority to a total of twenty Type-1 and Type-2 IMT's that were ordered by the Texas Interagency Coordination Center (TICC) over the course of the 100-day incident to manage a grid search of a corridor four miles wide along the orbiter's flight path using hand crews provided from 44 states. Four base camps were established along the length of the search corridor, each run by an IMT and populated by 20-50 crews. In addition, a camp operated in Longview, TX to coordinate the mobilization and demobilization of the 597 crews that were deployed over the course of the incident. Thus, at any given time during the incident, there were five IMT's on the ground.

With the help of Urban Search and Rescue Teams, crews were trained to deploy and search with a 75 percent probability of detecting shuttle material. The IMT's worked closely with NASA engineers and EPA technicians–in many cases forming a unified command structure–to conduct the search, recover, and document the material that was discovered. The search conditions presented unique challenges and safety concerns for the fire service. For example, cold and wet weather, poison ivy, snakes, and thick brambles dictated logistical support requirements that were unusual for fire crews (such as more substantial shelter, chaps, and dry boots). In addition, the combination of contract crews and personnel from agencies outside the fire service that were trained to different standards, unevenly prepared for searching in difficult terrain, and housed at separate locations, required the IMT's and crew leadership to accommodate variable performance levels.

Ultimately, the ground search covered an area of over 680,000 acres, an area approximately equivalent in size to the state of Rhode Island. Over 84,000 pounds of material were recovered, about 38% of the landing-configured weight of the orbiter. The material recovered permitted reconstruction of key components of the shuttle. This, coupled with forensic evidence from the material, was central to the determination of the cause and nature of the break up. The search also produced particular items that were of critical importance to the investigation (such as the on-board Modular Auxiliary Data System recorder that contained important information from the sensors aboard the vehicle, and cabin video that was shot as the crew began reentry), as well as some of the research experiment payloads that produced useful scientific data.

IV. OPERATIONS AND MANAGEMENT FINDINGS

This section presents the findings of this study pertinent to the four research questions posed in Section II, above, and is organized around these questions. Much of what is presented here is substantiated with more detailed (and less redacted) data contained in Appendices 3 and 4.

Lessons from the shuttle Columbia recovery operation

The IMT's were asked to reflect on their experience during the shuttle Columbia recovery operation, and to identify factors that helped to make the operation was successful, as well as problems or challenges that should be addressed in future all-risk responses. Reported below are the consolidated and summarized points raised by the IMT's.

1. Mission focus.

    By the time most of the IMT's began to be deployed (beginning at the end of the second week), the response itself and the relationships among the lead agencies were well organized. The IMT's operated in specific roles to support an unambiguous mission (the ground search for shuttle material) and to fulfill clear objectives. The teams praised the mission-focused nature of the effort. In particular, they noted that there was an unusual lack of jurisdictional tensions (so-called "turf battles"). Moreover, success was measured by what was accomplished: As one team member explained, "It was about mission focus–identifying problems and solving them, not focusing on how the problem developed."

    It should be noted that those who were "on the ground" at the beginning of the incident, and who comprised an *ad hoc* IMT, experienced a great deal of chaos and confusion during the first several days. This was partially attributed to a leadership vacuum that arose because FEMA was unaccustomed to its role as lead agency (rather than supporting a state government). This was also displayed in the mission assignments FEMA wrote, in which the IMT's reported that "the language was not clear and concise." Participants suggested that future incidents would succeed better if leaders were identified up front and agency roles and responsibilities were clarified early. Particularly in incidents that involve active threats to life and property, addressing leadership concerns quickly is vital to success.

2. Role clarity and empowerment.

    Many team members praised the fact that the teams and the agencies both seemed to understand their roles well, to be empowered to fulfill them, and to be open to working together. One mentioned that "Agencies were open to feedback and allowed the IMT's to have discretionary input." Several commented that one reason the search effort was so successful is that on this incident they were asked to use their full incident management capacity, rather than being limited to a supporting role, as they often are during non-wildfire incidents. Furthermore, they were allowed to employ their own incident command system, with which they are comfortable because it is "tried and true after 33 years."

    One participant summarized, "Everyone had their role and was empowered to manage it, unlike working with FEMA in the past where there has been tug of war. This time we sensed

no tug-of-war with FEMA. We credit the Texas Forest Service with helping this." In fact, most applauded the clear delegation of authority from the Texas Forest Service, which was a key step in defining roles. Others did, however, note the lack of a clear area command organization,[15] since the Disaster Field Office seemed to fill this function, in addition to the roles of multi-agency coordination group and unified incident command. Of this unusual arrangement, one team member commented, "We adapted, but it was tough." In addition, it was noted that there is no national coordinating authority for all-risk, as there is for wildfires.

One characteristic of success the IMT's often mentioned is flexibility–the ability to adapt to unique circumstances and requirements. This requires sufficient discretion and independence, as was granted on the Columbia recovery. Some mentioned that this approach worked better than circumstances where they are required to conform to FEMA guidelines, described as "not functional." One participant explained, "FEMA fell into a support role and recognized the capabilities of the IMT's. Generally, this is the other way around. I found FEMA more accommodating this time." As another described it, "We were multi-tasked–appropriately handed the whole ball of wax to manage in the geographic area we were responsible for. We are trained and to multi-task; that's why we come with resources, logistics, etc., and FEMA does not understand that. FEMA has a tough time understanding what all the IMT can bring to the table." In this case, FEMA was flexible enough to allow the IMT's to apply the full range of their expertise.

3. <u>Continuity</u>.

In a long-duration incident, continuity of operations can be difficult to maintain, particularly as an incident progresses from its fast-paced and chaotic early stages, often dominated by a multitude of local agencies, to more established and predictable later stages. On the Columbia incident, the upper management was the same for the entire 100 days of the operation, which served an important stabilizing function as the incident objectives shifted. Some participants noted that, because of this dynamic climate, the IMT's need to be more in-tune with the initial phases of the incident and to monitor the effectiveness and appropriateness of the direction they are given as circumstances evolve. One IC explained, "A good IMT anticipates a few days ahead. This allows being proactive versus reactive, and provides feedback on performance." On a related point, several teams mentioned that the transitions from team to team worked well, and that the operation could still be running seamlessly. They credit their training in transitions, their established relationships, a clear transition process, and the uniform framework under which they operate for the smoothness with which fresh personnel could be brought in without any compromise to the operation.

4. <u>Communications</u>.

Several respondents recognized the vital role that good communications played in several dimensions of the Columbia incident. At a fundamental level, many agencies did not understand the structure, capabilities, and operation of the wildland fire service. The Texas

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[15] Area Command is an organization established to: 1. Oversee the management of multiple incidents that are each being handled by an Incident Command System; or 2. Oversee the management of a very large incident that has multiple Incident Management Teams assigned to it.

Forest Service served as an intermediary to help the agencies understand one another and work together. At a command level, the teams mentioned how important it was that they were provided the information they needed to conduct their assigned missions. At an operational level, agencies successfully coordinated with each other using the daily planning framework ICS provides. Finally, at a physical level, interagency relationships benefited from co-location.

5. <u>Resources</u>.

One set of issues about which the teams made substantial comments was the availability and appropriateness of resources. Many complimented the capability of the Texas Interagency Coordination Center, which was able to interact effectively with the national resource distribution system. It was also pointed out that the IMT's had the support they needed to take good care of their crews and sustain their morale under working conditions to which they were not normally accustomed.

While the IMT system is adept at integrating and employing all types of resources, many of the teams attributed the constraints on resource availability to the fact that the wildland firefighting resource management system is not well-adapted to all-risk requirements. Several noted that the system is not prepared to handle requests 24 hours a day, 7 days a week, every day of the year. Many also commented about the level of support from their state and local agencies, reporting that agency administrators are reluctant to make personnel available for non-wildfire operations throughout the year. Some believe that their administrators do not feel a sense of urgency about non-wildfire incidents, and so did not want to release resources. Finally, some proposed that the length of commitment called for in the national mobilization guide (14 days) is not always suitable to meet all-risk requirements and could be extended to thirty days as some incidents might require.

In addition, the differences between purchasing and reimbursement authority for fire versus all-risk incidents caused considerable consternation for the teams, particularly with respect to the employment of state and private personnel. Teams also found it difficult to find the necessary people because name-requests or requests for personnel paid on a "portal to portal" basis were not honored initially, and because pay constraints with respect to both "base 8" and overtime kept local organizations from being willing to send personnel they would otherwise commit.[16] With respect to equipment, one team proposed that a FEMA logistics liaison be assigned to the IMT's to provide clear purchasing guidance, information about what resources are available in the national warehouses, and better management of accountable property.

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[16] Early in the response, portal-to-portal name requests were not honored in an effort by managers at the DFO to control costs. Later in the incident, when critical personnel shortages arose, such requests were honored. Often IMT's prefer the flexibility of name requests and portal-to-portal compensation because these incentives make it easier for them to obtain the people they want. On the other hand, portal-to-portal compensation is relatively expensive, so fiscally responsible managers use this approach judiciously. Name requests can slow the ordering process because positions are not open to be filled by the first available resource in the system. When critical shortages arise, however, name requests can help to resolve them.

6. Community relations.

    Teams were uniformly positive about their interactions with local communities during the Columbia incident. They were enthusiastic about the high level of local support and generosity. The teams were warmly welcomed by local residents, which was especially important since the search depended on access to a large amount of privately-owned land. At the same time, the teams worked hard to identify and address the needs and concerns of the communities where they were operating. Even absent a directive to do so, teams often developed a unified command approach with local public officials. As one team member observed, "The combination of our team's sensitivity and the local support made the incident successful."

7. Special concerns of all-risk incidents.

    The IMT's pointed out several issues raised by Columbia that apply to all-risk incidents more broadly. Many asserted that the national teams have the experience and expertise to manage all-risk responses, and that these assignments are a natural extension of their wildland firefighting incident management capacity. They recognize, however, that many all-risk incidents have characteristics that require technical expertise and resources that wildland IMT's do not habitually include. This suggests a need for all-risk incident analysis to characterize the complexity of each incident–and, moreover, to understand how multiple incidents interact with one another. Such analysis would permit the right teams to be assigned and appropriately tailored for the particular requirements of the circumstances they will face. One complication that is likely to arise in terrorist incidents is access to analysis, information, intelligence, which may be constrained by security concerns.

    Another important concern is human resources management in environments where personnel from several agencies operating under different rules, regulations, and professional codes of conduct are convened to work together as teams. Several examples of the difficulties posed by such circumstances arose on the Columbia incident, where EPA contractors and contract crews were not bound by the same physical fitness and training requirements as the regular fire crews were. Additionally, contractors did not report to the same chain of command, and lived under a different set of rules governing acceptable personal behavior, such as with regard to drinking and meeting attendance. This problem was exacerbated by personnel shortages, which increased the number of contractors and contract crews involved.

The characteristics of successful incident management

The IMT's were asked to confer with their fellow team members to provide a written list of the characteristics of successful incident management. The full, unedited list of the responses they provided is included in Appendix 4. What follows is a synopsis of the most salient points they made as they expounded on their responses during the subsequent group discussion:

1. Command and leadership

   The participants described several important characteristics of commanders and the command function. Three central points were reiterated by many of the IMT's:

   First, leaders should have a problem-solving orientation, which requires them to be able to work independently to identify and react to problems by obtaining and deploying whatever tools are necessary. Successful problem-solving particularly involves the ability to anticipate requirements. As one person said, "plan three days ahead, but take the incident one day at a time."

   Second, effective command demands the ability to be adaptable to rapidly changing conditions, and the flexibility to be responsive to unexpected events while maintaining focus on the primary mission. Often, bureaucratic procedures threaten the discretion necessary to be agile. Incident managers on the ground should be afforded adequate authority to solve the problems that would prevent the accomplishment of the mission.

   Third, these qualities should be incorporated into a standard organizational model or protocol that sets the parameters for decision-making and operations. The wildland fire service uses its own well-developed and carefully communicated version of the Incident Command System, that specifies important dimensions of incident management, including the span of control, chain of command, authorities, functions, and planning processes. Having a common model like ICS promotes stability and consistency, so that the management team can create order from the chaos brought by crisis events. The key is that the model needs to be shared by all agencies participating in the incident to reap its full benefits.

   The IMT's also emphasized the value of trust, which allows the team to function well internally, and allows it to interact with outside actors, such as the community, other agencies, and contractors. Building trust is a complex process that can be aided by several important actions: the display of professionalism; the exercise of social and political sensitivity to the needs, concerns, and circumstances of all involved in the incident; the use of continuous, honest feedback; and the demonstration that the safety and welfare of all personnel involved in the incident is of primary importance.

   In the end, IMT's made the point that there is no substitute for qualified, experienced, competent, committed leaders willing to make tough choices and decisions. Developing leaders with appropriate knowledge, skills, and abilities requires a well-developed standardized professional training and mentorship program. Moreover, it requires a commitment to staff positions based on specific qualifications, not on rank. (Though rank and qualification may be correlated, they do not automatically correspond to one another.)

2. Team dynamics.

   Several participants pointed out that complex incidents demand that numerous personnel and a diverse array of competencies be brought together to mitigate the threats and hazards at hand. Facilitating collaboration among these parties and marshaling them to become a well-functioning, effective, compatible team is at the core of successful incident management.

Incident managers must therefore be skilled at developing positive interpersonal and interagency interactions, and at promoting a team identity that subsumes individual egos.

As cohesiveness takes time to develop and incidents are characterized by urgency, incident management benefits greatly from the employment of pre-established teams with stable membership that habitually work together. Such teams have synergies that are hard to develop when teams are assembled hurriedly for a single incident or even only episodically. To reap these benefits, team members must work together frequently and over a long period.

Regardless of the team's composition, however, all teams function best when they share a vision of what their mission and priorities are, how they will fulfill them, what role each team member plays, and what responsibilities each member has. A shared vision emerges most powerfully when team members view themselves as participating partners in developing it, and when they feel themselves to be accountable for upholding their responsibilities.

3. <u>Communications and interpersonal relationships</u>.

    Leadership and team effectiveness depend, in turn, on consistent, open, and clear, communication and coordination with all involved. The IMT's defined communication broadly, to include timely transmission of accurate information, active listening, and providing and soliciting constructive criticism. They assume that communication must occur among all parties connected to an incident, including responders, public officials, citizens, and the media. They identified several tools that can enhance communications, as follows:

    *   Using a planning process that proceeds according to a set cycle.

    *   Conducting good incident briefings at regular intervals and careful briefings prior to and during transitions.

    *   Recognizing constraints on communications and working to overcome them.

    *   Establishing logistical support for communications up front.

    *   Making team members reasonably accessible to others.

4. <u>Mission, objectives, and operations</u>.

    The IMT's universally asserted that a shared, well-defined mission is at the core of successful incident management. The ability to specify the mission requires that the incident be well understood and that active jurisdictions and authorities be well-defined relative to it. If the incident managers discover areas where the mission, objectives, and priorities are unclear, unattainable, or participating agencies do not agree about them, they must work to generate clarity and explicit consensus. Moreover, they must be vigilant about maintaining clarity and consensus as the response evolves. To be successful in this, managers need to understand who their "customers" are and what the customers perceive their needs to be. This demands that managers be informed about and sensitive to the political, social, financial ramifications of the incident and the response. Moreover, managers must decide what actions

are required in the short-term and how these contribute to a broader plan for long-term resolution of the incident.

5. Resources and support.

    Incident management requires that jurisdictional authorities for a given incident have been identified and deconflicted. This is best facilitated by two processes: the creation of a unified command approach and clear delegation of authority to meet explicitly articulated expectations. Agencies deployed to the incident must be supportive of each other, but must also be supported by their home governments or organizations, and by the host government.

    Mitigation of any major incident also requires the coordination, commitment, and deployment of resources from an array of sources. This is best facilitated by a nationwide system of coordination and dispatch centers that can requisition and track resources. Such a system allows resources to flow efficiently, promotes accountability, and permits senior leaders to work together to apportion resources across multiple incidents. For a national coordination system to succeed, however, appropriate resources must be readily available and accessible to the system year-round. The system must also have adequate information management technology.

    Responsible resource management ultimately rests with incident commanders, who must exercise fiscal responsibility and practice cost containment in a manner that balances cost against attainment of other objectives (a tradeoff usually referred to as cost efficiency, where desired objectives are obtained at minimum possible cost).

6. Interagency relationships.

    The IMT's agreed that any single team does not possess all of the competencies required to manage every incident; moreover, they emphasize that capacity is greatly enhanced by the contributions and cooperation of multiple parties with diverse expertise. As one said, "None of us is as smart as all of us!" Another pointed out that, "inter-agency, inter-disciplinary involvement assembles a wider scope of strengths to give the team greater depth and potential for success." In particular, incorporation of technical experts allows a "generic" IMT to be customized to the requirements of a particular incident response. Likewise, coordination with local agencies permits the team to capitalize on their unique knowledge of their own jurisdiction and the tailored expertise that they bring, and it helps the IMT to be fully aware of the concerns of the affected communities. And, even as the management team must be aware of and sensitive to the needs and concerns of the affected jurisdictions, governments and agencies that are receiving their support must allow the IMT the authority and discretion to manage the incident. This can be facilitated by the development of a national agreement among state and local governments for national emergencies.

    For interagency interactions to be successful, all participating agencies and responders must have a clear understanding of their mission, focus, and the incident command system in use, with the recognition that they may not be in charge (or that their authority is circumscribed). Regardless of their authority, participating responders must "check their egos and existing rank structure at the door" to become contributing members of a larger response structure.

7. <u>Training, expertise, and experience</u>.

It is well recognized that the knowledge, skills, and abilities required to manage a complex incident cannot be acquired in an *ad hoc* manner, but depend on the implementation of a careful and thorough training and professional development program. The IMT's pointed out some important considerations for such a program. First, they noted that practical experience is important to both developing and maintaining skills. New managers should work as trainees in the positions they aspire to, and receive feedback on their performance. Experienced managers need to participate in real incidents regularly to hone and expand their skills and to validate what they learn during intervening training exercises. Second, the IMT's emphasizes the value of managers with varied experiences. To facilitate this, they advocate a combination of cross-training and the incorporation of members with diverse backgrounds on each team. Third, the teams identified the use of a vigorous mentoring program as an important vehicle for cultivating a steady stream fresh, new members to prevent teams from becoming stale and stolid.

Considerations for the employment of IMT's for All-Risk Response

This section reports the findings from the written Q-methodology survey, in which the 57 participating IMT members ranked forty opinion statements about the capacity of IMT's for all-risk response. (The technique used to analyze these data is described briefly in Section II, above, and presented in greater technical detail in Appendix 2a.) The ways participants sorted the statements were compared using common statistical techniques to identify groups comprised of people who organized the statements similarly according to their level of agreement or disagreement with each statement. This revealed different perspectives that exist; the people whose sorts corresponded significantly with a given group share similar views on the issue of all-risk capacity. Interpretation of the groups was based on the construction of a "model Q-sort" for each group, which is somewhat akin to a weighted average of their individual responses. These model sorts permitted the statements that uniquely define each group of people to be identified, and the sorts were compared to discover areas of consensus and dissension about the subject in question.

In this section, the views different groups of IMT members have of their capacity for all-risk response are described based on the model sorts. Overall, four groups emerged for which at least five participants' sorts were statistically significant, so four distinct perspectives are evident among the respondents. These groups are not entirely independent, however. As shown in Appendix 3b, some respondents fell into more than one group. In addition, a high proportion (61.4%) of the participants fell together in one dominant group among the four, demonstrating that there are some very commonly held opinions among the IMT's. The four groups of participants that emerged from the analysis do, however, vary in terms of which issues were most important (i.e. in terms of the strength of their agreement or disagreement with each statement).

Recall from the explanation of methods (Section II, above) that all issues about which the respondents characterized the strength of their opinions were statements that the respondents themselves generated as a group. Thus all of these statements were important to at least someone in the set of respondents. Also, participants were asked to explain, in writing, why they agreed or

disagreed with those statements that they sorted at the extreme ends of the distribution (that is, those they felt most strongly about). Their comments help to illuminate those issues that garnered the strongest opinions. Representative compilations of some of the written comments respondents provided are presented in Appendices 3d and 3e. These comments help to substantiate and illuminate the general descriptions provided below.

Dominant perspectives.

The model sorts were first interpreted by examining those statements with which each group strongly agreed or disagreed (i.e. ranked as ± 3 or ± 2), and then the common perspective held by the group is described. Refer to Appendix 2c for the statements and 3a for the model sorts to see the extent to which each group of participants agreed or disagreed with the cited statements on average, and relative to other participants.

Group 1. Thirty five of the 57 respondents (61.4%) coalesced to form this group. Generally these respondents support the participation of wildland IMT's in all-risk responses, but are concerned that their teams lack the home agency support, personnel and equipment resources, and technical expertise to participate in these incidents (very strong agreement with statements 3, 23, and 10; very strong disagreement with statement 35). In particular, these respondents doubt their present capacity to manage incidents that involve hazardous materials (HAZMAT) and weapons of mass destruction (WMD) (very strong disagreement with statements 32 and 33). Moreover, this group is distinguished from the other three groups by its strong belief that all-risk incidents may reduce the continued interest of IMT personnel (strong agreement with statement 17, whereas other groups are neutral or disagree). As one respondent put it, "IMT's in my region are struggling to maintain full rosters even without the addition of all-risk responsibilities. Adding all-risk will create a predictable decline in participation." Group 1 is also distinguished by its lack of strong opinion about whether the IMT's have the capacity to manage in the context of large-scale, long-term, all-weather, year-round, intergovernmental incidents (as evidenced by the fact that stronger concerns about other issues relegated statements 5, 22, and 29 to the neutral column of this group's model sort). This group seems dominantly focused on the need for the field to specify the legal, procedural, operational, and resource parameters for all-risk response (strong agreement with statements 13, 14, 18, and 20, and strong disagreement with statements 1 and 4).

Group 2. Thirteen of 57 respondents (22.8%) comprised this group. These respondents are convinced that their teams have the capacity to manage all-risk incidents, but they caution that it is important to recognize that their primary mission is firefighting, a position that distinguishes this group from the others (very strong agreement with statements 5 and 9). One respondent said, "If we 'wildland fire agencies' commit our most valuable and experienced resource to all-risk teams it could have serious impacts on our pre-suppression, suppression and fuels programs. It could cause safety concerns for our wildland fire fighters and put our natural resources at risk." Like Group 1, this group thinks it is important to incorporate personnel from other disciplines to enhance the IMT's capacity (very strong agreement with statement 3). This group also worries along with the other groups that IMT's are not adequately trained in HAZMAT and WMD (very strong disagreement with statements 32 and 33). These respondents point out that the business management handbook does not address all-risk adequately (very strong disagreement with statement 40), though they do not share the other groups' strong sense

that funding criteria and sources for personnel and equipment are problematic (only Group 2 did not rank statement 35 as –3 or –2). Also distinct from the other groups, this group strongly feels that the IMT's work well in intergovernmental incident command structures (none of the other groups ranked statement 29 above +1). Finally, Group 2 is the only group that disagrees that the jurisdictional protectiveness of outside agencies can impede the teams' ability to manage (statement 19) and that competitive sourcing will negatively affect agencies' ability to respond to all-risk incidents (statement 2).

Group 3. Seven of 57 respondents (12.3%) were encompassed in this group. This group is distinguished by its very strong assertion that competitive sourcing and downsizing will have a significant negative impact on public agencies' ability to respond to all-risk incidents (statement 2), which Groups 1 and 4 only mildly agreed with and Group 2 disagreed with. As one respondent claimed, "Competitive sourcing has the potential to wreck the Forest Service, and if that happens it will seriously compromise our ability to respond to any emergency, including all-risk." At the same time, Group 3 does not think that pay incentives should be restructured to attract top talent (strong disagreement with statement 21, relative to other groups that were neutral or agreed) and considers the IMTs' current personnel configuration is appropriate for all-risk response (the only group that agreed with statement 4). Group 3 also argues that IMT's are well positioned to for all-risk response and are able to integrate inputs from many external agencies (very strong agreement with statements 5 and 34). Like the other groups, these respondents are reticent about their HAZMAT and WMD capacity, and also doubt that they have the right personal protective equipment to handle all-risk responses (strong disagreement with statements 25, 32, and 33). In this vein, this Group is distinguished by its strong feeling that the IMT's need to do a better job of safety training for all-risk responses (strong agreement with statement 15). Finally, this group is also characterized by its strong interagency sense, believing that maintaining relationships, developing unified command with other agencies, and integrating personnel from other agencies are all important, though they do not find it easy to work with other agencies unaccustomed to ICS (very strong agreement with statements 3, 8, and 28, but strong disagreement with statement 38).

Group 4. Five of 57 respondents (8.8%) made up this group, which is very different from the others. Most notably, this group strongly disagrees with statement 23 (that current wildland fire agency missions do not address all-risk incidents, and therefore the line officers do not fully support all-risk incidents), while almost all other respondents (Groups 1 and 2) either strongly or most strongly agree with this statement. As another example, Group 4 rates the need to prepare personnel for the trauma of all-risk responses as one of its strongest concerns (very strong agreement with statement 16, about which the other groups felt mild agreement or were neutral). And this group seriously doubts that IMT's have the human resources expertise required to address numerous interactions with outside entities, while other groups are less concerned and even disagree that this is a problem (very strong disagreement with statement 39, while the other three groups ranked this statement as –1, 0, and +1). This group also believes very strongly that current laws and authorities do not contemplate all-risk response, but other groups are ambivalent about or even disagree with this point (very strong agreement with statement 12). One participant in this group stated, "Laws don't allow all-risk response. Our state cooperators are unable to participate without Presidential declaration and imminent threat to human life and property." The group does believe that IMT's have the experience, process, roles, and relationships to manage large-scale, long-term incidents, as Groups 2 and 3 do (very strong

agreement with statement 5), but also thinks that IMT's lack adequate establish training, qualifications, and performance standards for all-risk incidents, as Groups 1 and 2 also do (very strong disagreement with statement 24). Finally, this group is the only group that disagrees that the field must focus first on its wildland mission (statement 9) and that teams need to integrate personnel from other emergency management agencies to expand their expertise (statement 3).

Areas of Consensus.

There are some statements about which all four groups are statistically indistinct. These are statements 7 ("We must understand the scope and depth of the existing FIRESCOPE Project which is inherently all-risk."), 11 ("The role and capacity of IMT's are well-understood by the general fire/emergency service community."), and 27 ("We are comfortable managing sensitive information or intelligence."), all of which garnered a reaction of neutral to mild disagreement. While the IMT's may have strong feelings about these statements, all other statements drew more powerful responses, so the respondents were at least relatively (if not actually) ambivalent about these. In addition, areas of agreement can be identified by measuring the degree of similarity across groups for each of the forty statements (see Appendix 3b) and discerned from the additional comments provided by the respondents (see Appendix 3d). This shows three statements about which all groups have very strong opinions. Statements 32 and 33, which state that the IMT's are adequately trained to manage HAZMAT and WMD incidents, respectively, both saw very strong disagreement. (Groups 1, 2, and 3 ranked both of these statements as –3, and group 4 ranked them as –2.) On the other hand Groups 2, 3, and 4 all agreed most strongly with statement 5 ("We have the experience, process, roles, and relationships to manage large-scale, long-term incidents."), while Group 1 was neutral about this statement.

Areas of Dissention.

Areas where the groups see the world differently can be identified by examining those statements that distinguished each group (as discussed in the descriptions of the groups, above) and by measuring the degree of statistical dissimilarity across groups for each of the forty statements (see Appendix 3b) and discerned from the additional comments provided by the respondents (see Appendix 3e). Respondents diverged most in their opinions about statements 2 ("Competitive sourcing/downsizing will have a significant negative impact on federal/state/local agencies' ability to respond to all-risk incidents."), 21 ("Pay incentives need to be restructured to attract top talent."), and 23 ("Current wildland fire agency missions do not address all-risk incidents, therefore the line officers do not fully support all-risk incidents."). For each of these statements, three of the groups agreed or were neutral, while one group disagreed (a different group in each case). As shown in Appendix 3b, there were nine other statements about which some groups agreed and others disagreed.

Correlation with other factors.

Appendix 3c reports the demographic characteristics of all four groups, as well as for those respondents that did not fall into any group. Since the participants are not randomly sampled, Q method does not provide insight into how these known "subjectivities" are distributed across a population (in this case, across all members of all IMT's). Other worldviews may exist that might be revealed if different people were chosen. It is possible, however, to look for patterns of other attributes across groups, such as variations in demographic characteristics, to lend insight

into what might contribute to a person's proclivity to adhere to a certain perspective. Generally, the groups are fairly similar in their composition. Some correlations are suggestive, however. The group that was most different from the others in its opinions, Group 4, is also the most experienced, in that its members have served the longest in the wildland fire service, the longest in overhead positions, the longest on IMT's (including the longest on their current IMT), and the longest in their current position, on average. This group is also more active in professional associations, and its members have taken the largest number of fire service courses in all categories, on average. Of those with military service, Group 3 has the highest number, despite the fact that it is a relatively small group–over half of the group's members were commissioned or noncommissioned military officers. Group 3 also has the highest proportion of college attendees, and more average years of attendance. Group 3 is also dominated by employees of federal agencies. All of the finance chiefs and most of the plans chiefs loaded in Group 1.

Recommendations for the new Department of Homeland Security

The wildland fire service can offer the benefit of its expertise and experience to DHS as it develops its own inherent preparedness and response capacity, considers how to employ existing government response assets and capabilities, and creates a new national response system (especially through the development of a National Response Plan and National Incident Management System to replace the current Federal Response Plan). The IMT members were asked what advice they would give DHS as they address these issues. In particular, the following questions were posed: What should DHS consider as they examine the issue of incident management? What new capacity should the DHS develop? How can the DHS leverage existing capacity resident in other agencies and levels of government? What should be the role of the wildland fire service's IMT's in future homeland security and/or all-risk responses? The following is a synopsis of the comments made by the IMT's in response to these questions. This presentation does not repeat points that are redundant with commentary already reported above.

1. Vision.

   The IMT's argue that form should follow function, and that DHS should first articulate a clear direction and intent for incident management nationwide. This requires careful attention to the question of what capacity is needed and what capacity already exists. Coupled with this, DHS should consider what the performance objectives for the system (both old and new components) should be.

   There was some disagreement about whether the existing wildland IMT's should be incorporated into DHS's national incident management system. While almost all agreed that these IMT's have world-class capacity (some argue the nation's best capability) to handle complex incidents, and most were interested in participating in all-risk responses, many recognized important constraints that must be addressed: Most importantly, the IMT's have a mandate to fight fire. The stature of this priority means that the natural resources agencies at both the state and federal levels are reluctant to over-commit the IMT's to other types of incidents when the threat of fire looms. To make IMT's available therefore requires a clear determination of what their role should be by the agencies and by the federal and state legislatures. It also requires that these teams have unimpeded access to adequate personnel and equipment to meet the missions they are assigned.

Some suggested that the existing wildland IMT's should be a "stop gap" or "temporary patch" for a few years to meet the response need while DHS creates and staffs its own IMT's. After this period, the IMT's could continue to respond to all-risk responses for which DHS is responsible under specific guidelines. This would allow DHS to staff enough teams for a "normal" load of incidents, and give them access to additional IMT's when multiple incidents or very complex incidents occur. Some participants also pointed out that the capacity of existing IMT's could be enhanced to make them more able to manage all-risk responses. They noted that they lack some critical skills, particularly with respect to hazardous materials and weapons of mass destruction. DHS could provide technical experts that could be added to the IMT's.

Finally, as a practical matter, the IMT's would like to understand DHS's expectations for them better, and want to know how the current IMT's will be included in the new NIMS and NRP and what new teams will be formed. They suggested that if DHS forms its own team or teams, these should be similar in structure to the current IMTs to allow for interoperability.

2. Existing expertise.

With respect to incident management, there are many existing assets and systems that can be employed and should be coordinated. Many participants expressed concern that DHS will "reinvent the wheel" –create a new system and a new set of teams rather than building on the expertise and experience that already exists and has been developed over years. As one incident commander put it, "We have the infrastructure, practice, etc. to manage incidents, and the coordination system to get the resources, and it would be a waste of money to duplicate the system and the expertise that already exists. We have a process and system that works. We can build towards a new process if it is identified. We can adapt our organization to fit the new needs." Another suggested that DHS use the existing wildland IMT's as consultants and adopt their version of ICS for a year-long trial, after which changes can be proposed and implemented to further develop ICS for all-risk environments.

3. Intergovernmental focus.

The IMT's emphasized the point that DHS must recognize the role and capacity of the local and state assets. Even major incidents involve a tiered response that has the needs of citizens and local communities at the foundation. Currently, the IMT's believe a top-down approach to incident management is used by the federal government, but that a bottom-up approach may be more appropriate. This suggests that DHS must explicitly consider how to facilitate a well-functioning, participatory intergovernmental team for large incidents. In effect, DHS will need to develop expertise in how to facilitate unified command.

4. Resources.

A fundamental question when considering a national incident management system is how to move resources around the country, especially when most of these resources are not in the federal government. As local and state assets take explicit responsibility for homeland-security missions in an intergovernmental system coordinated by DHS, it will be important to consider how to make the necessary resources available and accessible to whomever is

charged with managing the incident. Some of the team members recommended using the resource tracking system that the wild fire land has developed, especially when (in the opinion of some) FEMA does not have good system.

Part of the concern here is that there are an array of resources available across the nation at all levels of government, but no single agency seems to have visibility into what is available. The IMT's recommended developing a catalog of assets and capabilities. They made the point that most counties have such databases for their own jurisdictions, and that many states have collected these databases. A national catalog could integrate the existing distributed system. Simply knowing what is out there is not enough, however, the new system must contemplate how to incorporate these resources on an incident. They need to be thought of as modules that can "plug in."

One team suggested developing an approach to incident complexity analysis for all-risk response, patterned after the approach used in the wildland arena. Coupled with appropriate criteria, such a model could help decision-makers determine the resources and resource levels needed to mitigate the incident. It is important to recognize, however, that some agencies cannot afford to pre-position resources, so resource requirements for a given incident could compete with other commitments absent budgetary support.

5. Qualifications and training.

If and when DHS decided to create a set of IMT's (either from existing teams or from whole cloth), DHS will face two very important decisions: how to staff the IMT's and how to keep their skills sharp. On the issue of staffing, the participants emphasized that the goal is to put the most qualified person in charge of the incident, regardless of rank, title, or seniority. They therefore recommend that DHS implement a performance-based qualifications system. They also suggested that the current IMT's could take the role of training, coaching, and mentoring the new IMT's. The new IMT's could shadow existing teams on incidents. Nonetheless, several IMT members believe that federal IMT's, such as those proposed by FEMA, will not be able to keep busy enough to develop and exercise their skill set. The current IMT's are frequently "in battle." The IMT's suggest that if too much new capacity is created, performance may flag because there will not be a sufficient number of major incidents to keep new assets fully employed enough to sustain their expertise. In other words, as one team member put it, "DHS should ask how many incidents are expected in the next five years and how will new teams keep their expertise?"

V. CONCLUSION

This nation confronts important questions as it considers how to configure a national response system that can meet emerging homeland security requirements at all levels of government. Likewise, the nation's natural resources agencies face significant challenges as they determine their appropriate role in this system. This report details the perspectives and insights of 57 leaders from 21 IMT's about these issues. The analysis presented here shows that IMT's embody much expertise that is invaluable to the management of all-risk incidents. This expertise may be applied directly by deploying the IMT's themselves, or it may be transferred to other entities with responsibility for incident management. These alternatives each raise important considerations about the missions, human and capital resources, training, and procedures of the organizations involved.

While the wildland IMT's house crucial incident command expertise, the analysis also shows that they cannot be considered fully capable of all-risk response. Specifically, IMT's face three important constraints to their ability and availability to manage all-risk incidents: 1. They lack the full support of their agencies, often because the demands of all-risk responses conflict with their primary wildland firefighting mission; 2. They lack adequate training in managing incidents that involve hazardous materials and weapons of mass destruction, though some capability could be gained by employing technical experts; and 3. They lack access to human and capital resources appropriate to year-round, all-weather missions, though the existing resource ordering framework could be adjusted to accommodate these requirements.

In many ways, the findings of this analysis are unsurprising. Several in the natural resources community have predicted many of them. Interestingly, they echo some of the same conclusions reached by the NASF's task force in its 1999 report. What this report does add is substantial systematic evidence and detail from the experience of the IMT's, with Columbia as a useful example. It also highlights some of the areas of disagreement about how to proceed. In part, this dissention reflects differential experience of team members in different regions and at different levels of government, but it also suggests that the field is unclear about how it can or should accommodate emergent homeland security missions.

On the other hand, the high degree of consensus this analysis reveals is striking. Beliefs about how incident management ought to be conducted were very consistent across the respondents, despite their disparate agencies, missions, and roles. The most powerful examples of such shared values include: the need to "leave egos at the door"; the crucial importance of qualities like flexibility, feedback, compatible personalities, teamwork, cohesion, synergy, communication, cooperation, and coordination; the centrality of interagency relationships; and the utility of devices such as planning meetings, daily briefings, and unified command. This close alignment of views speaks to a profound culture of professional incident management that infuses the wildland firefighting profession and spans diverse agencies. That such a homogenous incident management culture has been developed across such disparate entities suggests that the emergent homeland security community may be able to achieve similar unity–but this would require years of concerted and consistent investment, as the wildland fire service has made.

APPENDICES

1   Incident Management
1a   Incident Command System Components
1b   Incident Management Team configuration
1c   Geographic Areas for Incident Management Coordination

2   Q Analysis approach
2a   Technical explanation of Q factor analytic methodology in this study
2b   Q Analysis instrument
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3   Q Analysis findings
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Appendix 1a: Incident Command System Components[17]

The ICS organization today develops around five major functions that are required on any incident whether it is large or small. ICS establishes lines of supervisory authority and formal reporting relationships. There is complete unity of command as each position and person within the system has a designated supervisor. Direction and supervision follows established organizational lines at all times. The following are the major responsibilities and duties of all ICS positions. Individual agencies may have additional responsibilities and more detailed lists of duties.

Incident Commander

The Incident Commander's (IC) responsibility is the overall management of the incident. On most incidents the command activity is carried out by a single Incident Commander. The IC is selected by qualifications and experience. The IC determines incident objective and strategy, sets immediate priorities, establishes an appropriate organization, authorizes an Incident Action Plan, coordinates activity for all Command and General Staff, ensures safety, coordinates with key people and officials, authorizes release of information to the news media and the public, and other key duties.

The IC may have a deputy, who may be from the same agency, or from an assisting agency. Deputies may also be used at section and branch levels of the ICS organization. Deputies must have the same qualifications as the person for whom they work and they must be ready to take over that position at any time.

Command Staff

Information Officer - The Information Officer answers directly to the Incident Commander and is responsible for developing and releasing information about the incident to the news media, to local publics, to incident personnel, and to other appropriate agencies and organizations. The IO may have numerous assistants if necessary. The IO organization conducts media briefings, tours, writes news releases, develops information summaries and displays, distributes newspapers to incident personnel, and works closely with other members of the Command and General Staffs.

Liaison Officer - Incidents that are multi-jurisdictional, or have several agencies involved, may require the establishment of the Liaison Officer position on the Command Staff. The Liaison Officer is the contact for the personnel assigned to the incident by assisting or cooperating agencies. These are personnel other than those on direct tactical assignments or those involved in a Unified Command. The Liaison Officer establishes and maintains interagency contacts, keeps agencies supporting the incident aware of incident status, monitors incident operations to identify current or potential organizational problems, and works closely with other members of the Command and General Staffs.

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[17] Prepared by the National Interagency Fire Center External Affairs Office (3833 S. Development Ave., Boise, Idaho 83705 208-387-5512) and posted at www.nifc.gov/fireinfo/ics_disc.html

Safety Officer - The Safety Officer's function is to develop and recommend measures for assuring personnel safety, to assess and/or anticipate hazardous and unsafe situations, exercise authority to stop and prevent unsafe acts, investigate accidents that have occurred within the incident area, and review/approve the incident medical plan.

General Staff

Operations Section Chief - Operations refers to the ways in which resources are applied in the field to meet emergency response objectives. In ICS, the Operations Section is responsible for directing and supervising the execution of all tactical activities. Operations Chiefs also coordinate activities with other entities, ensure safety, and request and release resources. Operations are often facilitated by an associated planning process. In the wildland fire service version of ICS, the device used is the Incident Action Plan, which specifies the objectives at hand and the tactical actions and resources assignments that will meet them, but also serves as a tool for assessing work and cost effectiveness, measuring progress, and providing accountability. The Operations Section Chief directly supervises all Operations Branch/Division/Group and Air Operations personnel, so the majority of most incident personnel work under the Operations Section - everyone else on the incident supports these "on-the-ground and in-the-air troops."

Planning Section Chief - The Planning Section Chief supervises the collection, evaluation, processing and dissemination of resource and situational incident information, and supervises the development of an Incident Action Plan for use on each incident. The Planning Chief is a member of the General Staff. There are four units within the Planning Section that can be activated as necessary:

- Resources Unit - check-in and status tracking of all resources/personnel on the incident.
- Situation Unit - collects, organizes and maps all incident intelligence information
- Documentation Unit - maintains official incident documentation files.
- Demobilization Unit - develops and implements the incident demobilization plan.

Technical Specialists may be incorporated into the incident management organization to provide a particular level of expertise necessary to properly manage the incident. They usually report to the planning section chief, but may be reassigned to the function that needs the expertise.

Logistics Section Chief - The Logistics Section Chief supervises all incident support needs, with the exception of aviation support. Six units may be established within the Logistics Section:

- Supply Unit - orders, receives, processes and stores all support supplies.
- Facilities Unit - sets up, maintains and demobilizes all support facilities.
- Ground Support Unit - maintains, services, all vehicles and provides transport services.
- Communications Unit - develops plan to provide radio and telephone communications.
- Food Unit - supplies food and water needs for the entire incident.
- Medical Unit - provides medical aid and emergency procedures for responders.

Finance/Administration Section Chief - The Finance/Administration Chief supervises all financial aspects of an incident. Not all incidents will require a Finance/Administration Section. There are four units that may be established within the Finance/Administration Section:

- Time Unit - ensures accurate recording of daily personnel time.
- Procurement Unit - handles vendor contracts, leases, and equipment time records.
- Compensation/Claims Unit - handles compensation-for-injury and property claims.
- Cost Unit - provides all incident cost analysis and maintains records of incident costs.
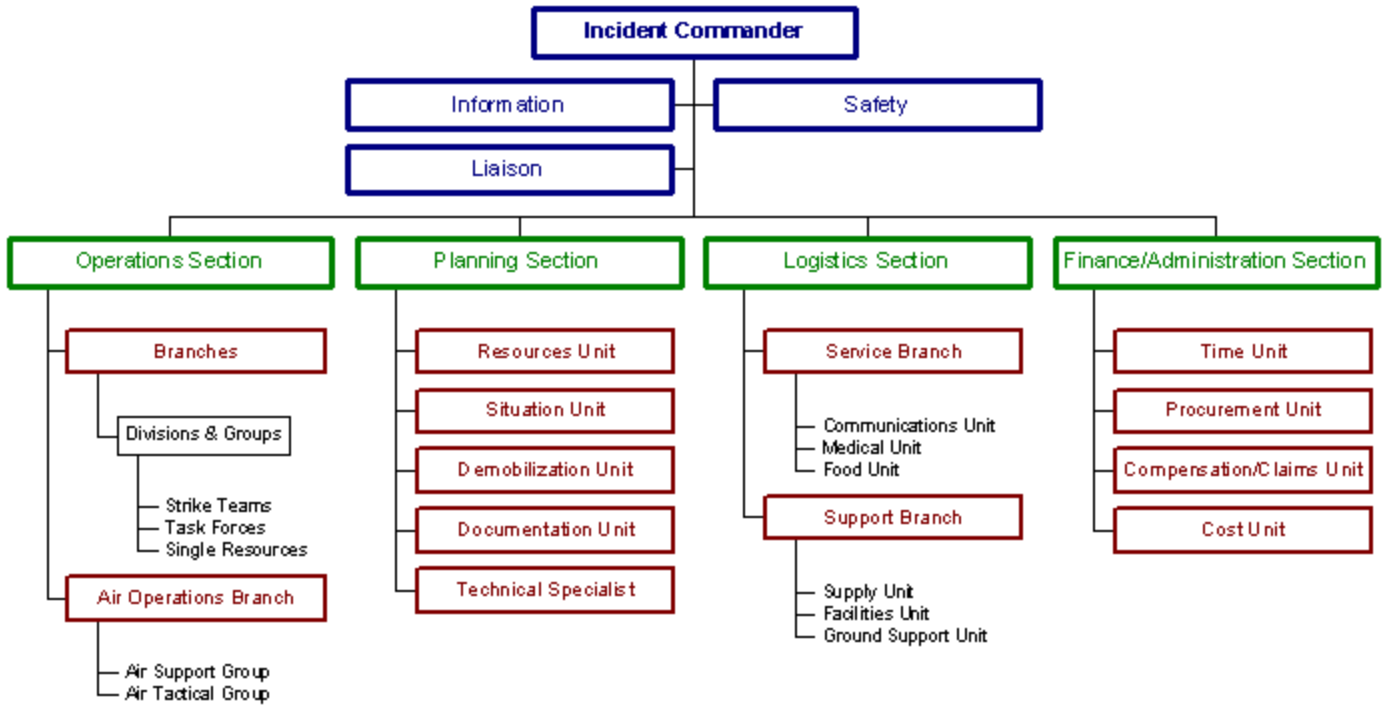
Appendix 1b: Incident Management Team Configuration[18]

Incidents are categorized (and IMT's are assigned to them) according to their complexity. A general typology of incidents follows:

Type 5 Incident

- Resources required typically vary from two to six firefighters.
- The incident is generally contained within the first burning period and often within a few hours after resources arrive on scene.

Type 4 Incident

- Command staff and general staff functions are not activated. Resources vary from a single module to several resources.
- The incident is usually limited to one operational period in the control phase.
- No written incident action plan (IAP) is required. However, a documented operational briefing will be completed for all incoming resources

Type-3 Incident

- In-briefings and out-briefings are more formal.
- Some or all of the command and general staff positions may be activated, usually at the Division/group supervisor and/or unit leader level.
- Type-3 organizations manage initial attack fires with a significant number of resources, an extended attack fire until containment/control is achieved, or an escaped fire until a Type-1 or 2 team assumes command.
- Resources vary from several resources to several task forces/strike teams.
- The incident may be divided into divisions.
- The incident may involve multiple operational periods prior to control, which may require a written action plan.
- A documented operational briefing will be completed for all incoming resources, and before each operational period.
- Staging areas and a base may be used.
- When using a Type-3 organization or incident command organization, a manager must avoid using them beyond the Type-3 complexity level.
- A Type-3 IC will not serve concurrently as a single resource boss.

Type-2 Incident

- Most or all of the command and general staff positions are filled.

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[18] Thanks to Geoff Wilford, Battalion Chief, Kern County Fire Department, for providing this description. See also the Interagency Standards for Fire and Aviation Operations (2003), Chapter 10 (available at www.fire.blm.gov/Standards/redbook.htm) for a more comprehensive description.

- The incident extends into multiple operational periods, requiring written action plans for each
- Many of the functional units are needed and staffed.
- Operations personnel normally do not exceed 200 per operational period and total incident personnel do not exceed 500 (numbers are guideline only).
- Divisions are usually established to geographically facilitate work assignments; a qualified division/group supervisor is not required on divisions established for reasons other than span-of-control or other complexity factors.

Type-1 Incident (characteristics include all of the criteria for Type-2, plus the following:)

- All command and general staff positions are activated.
- Operations personnel often exceed 500 per operational period and total personnel will usually exceed 1,000 (numbers are guidelines only).
- Divisions are established requiring division supervisor qualified personnel.
- May require the establishment of branches.
- High impact on the local office occurs, requiring additional staff for administrative and support functions.

Incident Management Teams ordered through a GACC or NICC, regardless of type, will be in either a long or short team configuration. Any variation from the standard configuration is at the discretion of the requesting unit. The Deputy Incident Commander is not mandatory on either team. The Incident Commander and Deputy Incident Commander positions on National IMT's and Area Type-2 Teams may only be filled by current agency employees. It is recommended that the following positions also be filled by current agency employees: Finance Section Chief, Procurement Unit Leader, Comp/Claims Unit Leader, and Compensation Specialist.

Short Team Members:
ICT1 Incident Commander
DPIC Deputy Incident Commander
SOF1 Safety Officer
IOF1 Information Officer
OSC1 Operations Section Chief (2 each)
AOBD Air Operations Branch Director
PSC1 Planning Section Chief
LSC1 Logistics Section Chief
FSC1 Finance/Admin Section Chief

Additional Long Team Members:
DIVS Division Group Supervisor (4 each)
ASG Air Support Group Supervisor
ATG Air Tactical Group Supervisor
SITL Situation Unit Leader
RESL Resource Unit Leader (2 each)
FBAN Fire Behavior Analyst
COML Communication Unit Leader
SPUL Supply Unit Leader
FACL Facilities Unit Leader
TIME Time Unit Leader
PROC Procurement Unit Leader
GSUL Ground Support Unit Leader
COMP Comp/Claims Unit Leader

In addition to the 27 positions identified, National Type-1 IMT's may have a maximum of six trainees. These positions are identified by the National Type-1 IMT's, not by receiving units. Unless notified otherwise, these trainees will be mobilized for incidents on Federal lands. The National Type-1 Incident Management Team Rotation is maintained throughout the calendar year. The current rotation schedule and assignments are posted at www.nifc.gov/news/nicc.

Appendix 1c: Geographic Areas for Incident Management Coordination[19]

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[19] Posted at www.nifc.gov/fireinfo/geomap.html

Appendix 2a: Technical explanation of Q factor analytic methodology in this study

This appendix briefly explains a method by which it is possible to measure how individuals perceive their environments, and describes how it was implemented in this study. Q methodology is an analytical technique credited to Stephenson (1935) that facilitates systematic study of human subjectivity, defined as "a person's communication of his or her point of view" (McKeown and Thomas, 1988: 12). It is used to identify patterns of perceptions about a topic across individuals, and to construct typologies of perspectives based on interpreting these patterns. For a detailed description and technical explanation of the technique, and a comprehensive review of its application, see in particular Brown (1980), McKeown and Thomas (1988), and Brown, Durning, and Selden (1998).

Q Sample and Sorting Process

The application of Q methodology rests fundamentally on the assemblage of communication about a subject, from which is drawn a sample of statements selected to represent the range of opinion. Participants each sort these opinion statements into a forced quasi-normal distribution according to the extent to which they agree or disagree with them. This sorting process produces what is called a "Q-sort," or an individual's set of relative rankings for all statements included in the sample. McKeown and Thomas (1988) explain that the rationale for using the forced quasi-normal structure is to facilitate systematic consideration of the statements in the sample. Respondents retain freedom to locate a statement anywhere in the distribution, and anywhere relative to the other statements, permitting billions of combinations (Brown, Durning, and Selden, 1998). The distribution thus does not have meaning as a conventional attitude index, but as a picture of the relative relationships of the statements for an individual, which might not be revealed if simple scales were used. It has been demonstrated that the shape of the distribution is statistically and substantively inconsequential (Brown, 1971 and 1980, and Cottle and McKeown, 1980). Thus, in Q methodology, the participants are treated as variables, the statements they sort comprise the sample, and the ranks assigned to the sample statements by a participant through the sorting process comprise observations on that participant. The mechanics of the sorting process are readily illustrated by an example of the instrument provided to respondents. The directions and form on which respondents recorded their responses provided in this study are shown in Appendix 2b.

An important objective at hand in this study is to explore how the members of the Incident Management Teams perceive various aspects of the internal and external environment of their respective organizations, and to categorize these perceptions. While Brown points out that "the selection of statements…for inclusion in a Q sample is of utmost importance but remains more an art than a science…" (1980: 186), there are established conventions for generating the sample. Following Brown's (1980) recommendation, this study rests on a naturalistic sample (taken from members' communications) to maximize the likelihood that the sample captures possible opinions to which the members can easily attach meaning. It is also structured to promote systematic coverage of the topic of interest. For a detailed explanation of Q sample construction, see Brown (1980:186-191).

For this study, a structured, quasi-naturalistic sample of statements was generated from two sources: First, we compiled a list of written comments made by team members about the

operational and administrative environments of their teams made in response to exit surveys conducted by the Texas Forest Service in the field on the Columbia shuttle recovery operation before the teams demobilized. Then, in a group discussion during a one-day conference that included all key staff from IMT's deployed on the Columbia incident, participants were asked to propose statements that characterized the most important issues that confront the wildland fire service as they consider the commitment of their IMT's to all-risk incidents. These comments were then categorized by topic, and redundancies were eliminated. The comments were paraphrased for brevity. The full list was narrowed to the 40 most prevalent comments that covered the full range of issues raised. The sense of some statements was changed from positive to negative, or from negative to positive, to allow for a more balanced instrument. The final sample of statements appears in Appendix 2c.

During a session at the IMT conference, the 57 participants were asked to sort the randomly ordered statements into a quasi-normal distribution ranging from -3 (most strongly disagree with the statement) to +3 (most strongly agree with the statement). For the statements with which the members agreed and disagreed most strongly, they were asked to explain why they felt as they did. In addition, members were asked to provide some basic demographic information, and information about their professional education and experience. These descriptive data are reported in Appendix 3c.

Q Factor Analysis and Interpretation

The ways participants rank the statements (captured in the individual sorts) are compared using common factor analytic techniques to arrive at factors that represent groups of people who sorted the statements similarly. Thus, Q methodology effectively reveals different perspectives that exist; the people whose sorts load significantly on a given factor share similar views on the subject under study. Interpretation of the factors is based on the construction of a factor array, or "model Q-sort," for each factor. This is accomplished by merging the sorts that loaded significantly on that factor, weighted according to their loadings, to achieve average scores for each statement, by factor. These model Q-sorts permit the statements that uniquely define each factor –and thus each group of people– to be identified.

Once the factor arrays are constructed, it remains to interpret them. Brown, Durning, and Selden (1998) suggest a three-step approach: First, identify those statements with which each group strongly agreed or disagreed. Next, describe the common theme presented by the array. Finally, compare the groups. Because the Q approach is intensive –Q studies typically involve small numbers of respondents– it provides detailed information about how respondents feel about a particular topic. In this sense, the Q technique promotes "situational representativeness" by causing each respondent to address and model the broad array of possible states that arise with respect to the topic under investigation (Brown, Durning, and Selden, 1998: 623). People who sort the sample similarly (and therefore load together) form groups that can be compared using the factors arrays to discover areas of consensus and dissension about the subject in question. Since the participants are not randomly sampled, Q method does not provide insight into how these known "subjectivities" are distributed across a population. Other worldviews may exist that might be revealed if different people were chosen (Selden et. al., 1999). It is possible, however, to look for patterns of other attributes across groups, such as variations in demographic

characteristics, to lend insight into what might contribute to a person's proclivity to adhere to a certain perspective. For this study, such characteristics are reported in Appendix 3c.

In this study, the Q-sorts of the respondents were correlated to create a 57 X 57 matrix of correlations between the sorters. This matrix was factor analyzed using the principal components method. Eight factors with eigenvalues greater than unity were rotated using varimax. Four factors emerged for which the loadings of at least five participants' sorts were significant at $p \leq$ .01. Thus, these factors each represent a particular perspective on issues that confront IMT's held by a group of team members. All members who load significantly on a factor have a similar view of these issues. The factor loading for each member represents the correlation of his sort with that factor. Further, as explained above, factors are interpreted according to a factor array. The arrays for each of the four factors (or groups of team members) that emerged in this study are presented in Appendix 3a. In other words, Appendix 3a shows how those members that loaded on each factor sorted each statement as a weighted average (i.e. in which column of the distribution shown in Appendix 2b each group of members would have placed each statement).

Appendix 2b: Q Analysis instrument

DIRECTIONS

You have been provided with 40 cards numbered from 1 to 40. Each card has a statement written on it. They are in no particular order. You have also been provided with a record form.

These directions lead you step-by-step through a systematic process for ranking the cards according to how strongly you agree or disagree with the statements on them. You should consider how true you think each statement is **for you personally** in the context of your role as a member of an Incident Management Team.

STEP 1.   Begin by reading the cards one at a time. As you read them, place them in three piles. Those cards you agree with, place in one pile. Those cards you disagree with place in a second pile. Those cards you feel neutral about or have no opinion about, place in a third pile.

STEP 2.   Next, select the three cards from your "agree" pile with which you *agree most*. Write the numbers of these cards in the three spaces provided under the +3 (most strongly agree) column at the right hand side of your record sheet.

STEP 3.   From the cards remaining in your "agree" pile, select the next 5 you most agree with, and write the numbers of these cards in the +2 (strongly agree) column on your sheet. If you do not have enough cards in your "agree" pile to fill the column, select the most agreeable cards from your "neutral" pile to fill it.

STEP 4.   From the cards remaining in your "agree" pile, select the next 7 you most agree with and write the numbers of these cards in the +1 (agree) column on your sheet. Again, if you do not have enough cards, select the most agreeable cards from your "neutral" pile to fill the column.

STEP 5.   If you have leftover cards in your "agree" pile, place them in your "neutral" pile. At this time, *do not* write in the 0 (neutral) column on your record sheet.

STEP 6.   Now, go to your "disagree" pile and select the three cards with which you *disagree most*. Write the numbers of these cards in the three spaces provided under the –3 (most strongly disagree) column at the left hand side of your record sheet.

STEP 7.   From the cards remaining in your "disagree" pile, select the next 5 you most disagree with, and write the numbers of these cards in the –2 (strongly disagree) column on your sheet. If you do not have enough cards in your "disagree" pile to fill the column, select the most disagreeable cards from your "neutral" pile to fill it.

STEP 8.   From the cards remaining in your "disagree" pile, select the next 7 you most disagree with and write the numbers of these cards in the –1 (disagree) column on your sheet. Again, if you do not have enough cards to fill the column, select the most disagreeable cards from your "neutral" pile to fill it.

STEP 9.   If you have leftover cards in your "disagree" pile, place them in your "neutral" pile.

STEP 10.   Now, write down the numbers of the remaining cards (that is, those in your "neutral" pile) in the 0 (neutral) column on your record sheet. When you are finished, you should have no cards left over and no blank spaces on your answer sheet.

STEP 11.   Finally, please answer the questions on the bottom half of the record sheet and on the last page.

RECORD FORM

-3 **MOST STRONGLY DISAGREE** *(3 CARDS)*	-2 **STRONGLY DISAGREE** *(5 CARDS)*	-1 **DISAGREE** *(7 CARDS)*	0 **NEUTRAL** *(10 CARDS)*	+1 **AGREE** *(7 CARDS)*	+2 **STRONGLY AGREE** *(5 CARDS)*	+3 **MOST STRONGLY AGREE** *(3 CARDS)*
____	____	____	____	____	____	____
____	____	____	____	____	____	____
____	____	____	____	____	____	____
	____	____	____	____	____	
	____	____	____	____	____	
		____	____	____		
		____	____	____		
			____			
			____			
			____			

1. Please note the three statements you most ***agreed*** with (those in the +3 column). Briefly explain why you agreed with these statements so strongly. Use the back of the form if necessary.

2. Please note the three statements you most ***disagreed*** with (those in the –3 column). Briefly explain why you disagreed with these statements so strongly. Use the back of the form if necessary.

Appendix 2c: Q Analysis statements

STATEMENTS EMPLOYED IN THE SURVEY

These statements were obtained from two sources: Some were extracted from the exit surveys completed by all IMT's before they demobilized from the Columbia shuttle recovery operation, and some were proposed by IMT's in a group discussion during a one-day conference that included all key staff from IMT's deployed on the Columbia incident. Note that these statements are not in the original form generated by the IMT's. The sense of some statements was changed from positive to negative, or from negative to positive, to allow for a more balanced instrument.

1. The basic infrastructure (cache system, resource allocations, funding mechanisms) in the wildland community is capable of supporting all-risk requirements.

2. Competitive sourcing/downsizing will have a significant negative impact on federal/state/local agencies' ability to respond to all-risk incidents.

3. We need to integrate personnel from other emergency management agencies to broaden our experience base and overall depth.

4. Our current personnel configuration (membership, number of personnel, etc.) is appropriate for all-risk response.

5. We have the experience, process, roles, and relationships to manage large-scale, long-term incidents.

6. Our expertise is based on volunteerism, and can be sustained as a collateral duty.

7. We must understand the scope and depth of the existing FIRESCOPE Project which is inherently all-risk.

8. It is important to maintain existing agency relationships even as new ones are established.

9. As we consider all-risk assignments, it is important to remember that we still have to fight wildland fire.

10. The interagency dispatch and coordination system must become more flexible and adaptable to support all-risk incidents.

11. The role and capacity of IMT's are well-understood by the general fire/emergency service community.

12. Current public laws and authorities do not allow for all-risk response.

13. The appropriate parameters are not well defined for future all-risk response. (There are scenarios to which it may not be appropriate for these teams to respond.)

14. It is important to think outside the box when ordering resources for all-risk incidents because typical wildland resources may not be the right tools for all-risk incidents.

15. We need to do a better job of personal safety training for all-risk assignments.

16. We need to mentally prepare IMT personnel for the potential for trauma and death associated with all-risk incidents.

17. All-risk incidents may reduce the continued interest of IMT personnel.

18. Legal ramifications, protections and insurance coverage for IMT's when they accept all-risk incidents need to be addressed.

19. Some jurisdictional protectiveness prevents us from performing all-risk assignments; some agencies may not accept us without a clear delegation of authority.

20. Authorities, procedures, and rules of engagement should be seamless and clear across agencies and levels of government prior to the event.

21. Pay incentives need to be restructured to attract top talent.

22. We need to configure and renegotiate national contracts for all-weather and year-round assignments.

23. Current wildland fire agency missions do not address all-risk incidents, therefore the line officers do not fully support all-risk incidents.

24. We have adequate establish training, qualifications, and performance standards for all-risk incidents.

25. We have appropriate PPE and other equipment for all-risk environments.

26. We need to establish purchase authorities with timely reimbursement for state/local IMT's so as not to compromise fiscal responsibilities or budgets.

27. We are comfortable managing sensitive information or intelligence.

28. Without being directed, we would pursue the development of a unified command with other agencies working on an incident to which we are assigned.

29. We are appropriately trained to work in intergovernmental incident command structures.

30. We have the authority and ability to provide logistical support to other agencies working on an incident.

31. We have sufficient expertise to meet the requirements of a large-scale all-risk incident.

32. We are adequately trained to manage HAZMAT incidents.

33. We are adequately trained to manage WMD (weapons of mass destruction) incidents.

34. We are able to coordinate and integrate information from a wide variety of agencies.

35. Funding criteria and sources for personnel and equipment are clear, appropriate, and consistent.

36. We can readily incorporate other non-NWCG assets, agencies, and organizations into our management system.

37. The capabilities of our medical units are adequate to support all-risk incidents.

38. We can easily work with agencies that are unaccustomed to ICS.

39. We have the human resources expertise required to handle a large volume of interactions with outside agencies and contract crews.

40. Our interagency business management handbook adequately addresses all-risk incidents.

Appendix 3a: Q Analysis factor summaries

GROUP 1

35 of 57 (61.4%) respondents loaded significantly

-3 Most strongly disagree	-2 Strongly disagree	-1 Disagree	0 Neutral	+1 Agree	+2 Strongly agree	+3 Most strongly agree
35	4	39	26	9	(17)	3
32	25	31	(5)	2	18	23
33	37	30	12	21	13	10
	1	**11**	28	8	20	
	24	38	22	16	14	
		(40)	34	19		
		6	**7**	15		
			36			
			27			
			(29)			

Most Strongly Agree:
3. We need to integrate personnel from other emergency management agencies to broaden our experience base and overall depth.
23. Current wildland fire agency missions do not address all-risk incidents, therefore the line officers do not fully support all-risk.
10. The interagency dispatch and coordination system must become more flexible and adaptable to support all-risk incidents.

Strongly Agree:
17. All-risk incidents may reduce the continued interest of IMT personnel.
18. Legal ramifications, protections and insurance coverage for IMT's when they accept all-risk incidents need to be addressed.
13. The appropriate parameters are not well defined for future all-risk response.
20. Authorities, procedures, and ROE should be seamless and clear across agencies and levels of government prior to the event.
14. Typical wildland resources may not be the right tools for all-risk incidents.

Most Strongly Disagree:
35. Funding criteria and sources for personnel and equipment are clear, appropriate, and consistent.
32. We are adequately trained to manage HAZMAT incidents.
33. We are adequately trained to manage WMD (weapons of mass destruction) incidents.

Strongly Disagree:
4. Our current personnel configuration (membership, number of personnel, etc.) is appropriate for all-risk response.
25. We have appropriate PPE and other equipment for all-risk environments.
37. The capabilities of our medical units are adequate to support all-risk incidents.
1. The basic infrastructure in the wildland community is capable of supporting all-risk requirements.
24. We have adequate establish training, qualifications, and performance standards for all-risk incidents.

KEY:
- Circled numbers indicate statements that significantly distinguish each particular group by how they are ranked within the sort framework (Statistical significance level is $p < .01$).
- Bold statements are those for which there is statistical consensus–they do not distinguish between any 2 groups.
- Statements are abbreviated here; see Appendix 1c for complete statements.

GROUP 2

13 of 57 (22.8%) respondents loaded significantly

-3 **Most strongly disagree**	-2 **Strongly disagree**	-1 **Disagree**	0 **Neutral**	+1 **Agree**	+2 **Strongly agree**	+3 **Most strongly agree**
40	4	22	28	(31)	20	5
33	37	17	(26)	(34)	(29)	(9)
32	25	38	12	10	23	3
	6	(19)	1	(39)	14	
	24	**11**	**27**	18	8	
		35	21	13		
		(2)	30	36		
			(16)			
			7			
			(15)			

Most Strongly Agree:
5.   We have the experience, process, roles, and relationships to manage large-scale, long-term incidents.
9.   As we consider all-risk assignments, it is important to remember that we still have to fight wildland fire.
3.   We need to integrate personnel from other emergency management agencies to broaden our experience base and overall depth.

Strongly Agree:
20.   Authorities, procedures, and ROE should be seamless and clear across agencies and levels of government prior to the event.
29.   We are appropriately trained to work in intergovernmental incident command structures.
23.   Current wildland fire agency missions do not address all-risk incidents, therefore the line offices do not fully support all-risk.
14.   Typical wildland resources may not be the right tools for all-risk incidents.
8.   It is important to maintain existing agency relationships even as new ones are established.

Most Strongly Disagree:
40.   Our interagency business management handbook adequately addresses all-risk incidents.
32.   We are adequately trained to manage HAZMAT incidents.
33.   We are adequately trained to manage WMD (weapons of mass destruction) incidents.

Strongly Disagree:
4.   Our current personnel configuration (membership, number of personnel, etc.) is appropriate for all-risk response.
37.   The capabilities of our medical units are adequate to support all-risk incidents.
25.   We have appropriate PPE and other equipment for all-risk environments.
6.   Our expertise is based on volunteerism, and can be sustained as a collateral duty.
24.   We have adequate establish training, qualifications, and performance standards for all-risk incidents.

> **KEY:**
> - Circled numbers indicate statements that significantly distinguish each particular group by how they are ranked within the sort framework (Statistical significance level is $p < .01$).
> - Bold statements are those for which there is statistical consensus–they do not distinguish between any 2 groups.
> - Statements are abbreviated here; see Appendix 1c for complete statements.

GROUP 3

7 of 57 (12.3%) respondents loaded significantly

-3 Most strongly disagree	-2 Strongly disagree	-1 Disagree	0 Neutral	+1 Agree	+2 Strongly agree	+3 Most strongly agree
25	38	(26)	19	14	8	5
32	30	22	(17)	10	15	(2)
33	35	**11**	31	(4)	3	(34)
	1	(40)	18	16	9	
	(21)	37	39	29	28	
		(12)	36	13		
		24	23	20		
			27			
			6			
			7			

Most Strongly Agree:
5.   We have the experience, process, roles, and relationships to manage large-scale, long-term incidents.
2.   Competitive sourcing/downsizing will have a significant negative impact on federal/state/local agencies' ability to respond.
34.   We are able to coordinate and integrate information from a wide variety of agencies.

Strongly Agree:
8.   It is important to maintain existing agency relationships even as new ones are established.
15.   We need to do a better job of personal safety training for all-risk assignments.
3.   We need to integrate personnel from other emergency management agencies to broaden our experience base and overall depth.
9.   As we consider all-risk assignments, it is important to remember that we still have to fight wildland fire.
28.   Without being directed, we would pursue the development of a unified command with other agencies working on an incident.

Most Strongly Disagree:
25.   We have appropriate PPE and other equipment for all-risk environments.
32.   We are adequately trained to manage HAZMAT incidents.
33.   We are adequately trained to manage WMD (weapons of mass destruction) incidents.

Strongly Disagree:
38.   We can easily work with agencies that are unaccustomed to ICS.
30.   We have the authority and ability to provide logistical support to other agencies working on an incident.
35.   Funding criteria and sources for personnel and equipment are clear, appropriate, and consistent.
1.   The basic infrastructure in the wildland community is capable of supporting all-risk requirements.
21.   Pay incentives need to be restructured to attract top talent.

KEY:
- Circled numbers indicate statements that significantly distinguish each particular group by how they are ranked within the sort framework (Statistical significance level is $p < .01$).
- Bold statements are those for which there is statistical consensus–they do not distinguish between any 2 groups.
- Statements are abbreviated here; see Appendix 1c for complete statements.

GROUP 4

5 of 57 (8.8%) respondents loaded significantly

-3 Most strongly disagree	-2 Strongly disagree	-1 Disagree	0 Neutral	+1 Agree	+2 Strongly agree	+3 Most strongly agree
(39)	23	36	**7**	2	14	(16)
35	24	37	1	18	(19)	(12)
40	6	30	10	21	13	5
	33	(3)	(25)	15	26	
	32	(9)	34	20	28	
		38	22	29		
		4	**11**	8		
			31			
			27			
			17			

Most Strongly Agree:
16. We need to mentally prepare IMT personnel for the potential for trauma and death associated with all-risk incidents.
12. Current public laws and authorities do not allow for all-risk response.
5. We have the experience, process, roles, and relationships to manage large-scale, long-term incidents.

Strongly Agree:
14. Typical wildland resources may not be the right tools for all-risk incidents.
19. Some jurisdictional protectiveness means that some agencies may not accept us without a clear delegation of authority.
13. The appropriate parameters are not well defined for future all-risk response.
26. We need to establish purchase authorities with timely reimbursement for state/local IMT's so as not to compromise budgets.
28. Without being directed, we would pursue the development of a unified command with other agencies working on an incident.

Most Strongly Disagree:
39. We have the HR expertise required to handle a large volume of interactions with outside agencies and contract crews.
35. Funding criteria and sources for personnel and equipment are clear, appropriate, and consistent.
40. Our interagency business management handbook adequately addresses all-risk incidents.

Strongly Disagree:
23. Current wildland fire agency missions do not address all-risk incidents, therefore the line officers do not fully support all-risk.
24. We have adequate establish training, qualifications, and performance standards for all-risk incidents.
6. Our expertise is based on volunteerism, and can be sustained as a collateral duty.
33. We are adequately trained to manage WMD (weapons of mass destruction) incidents.
32. We are adequately trained to manage HAZMAT incidents.

KEY:
- Circled numbers indicate statements that significantly distinguish each particular group by how they are ranked within the sort framework (Statistical significance level is $p < .01$).
- Bold statements are those for which there is statistical consensus–they do not distinguish between any 2 groups.
- Statements are abbreviated here; see Appendix 1c for complete statements.

Appendix 3b: Q Analysis statement rankings by group sorted by the degree of statistical consensus or dissension*

(Statements here are abbreviated; see Appendix 1c for complete statements.)

No.	Statement	Group 1	Group 2	Group 3	Group 4	
7	We must understand the scope and depth of the FIRESCOPE project	0	0	0	0	More Consensus
11	The role and capacity of IMT's are well-understood by the general fire	-1	-1	-1	0	
27	We are comfortable managing sensitive information or intelligence.	0	0	0	0	
38	We can easily work with agencies that are unaccustomed to ICS.	-1	-1	-2	-1	
35	Funding criteria and sources for personnel and equipment are clear, approp	-3	-1	-2	-3	
24	We have adequate establish training, qualifications, and performance stan	-2	-2	-1	-2	
14	It is important to think outside the box when ordering resources for all-risk	2	2	1	2	
22	We need to configure and renegotiate national contracts for all-weather an	0	-1	-1	0	
30	We have the authority and ability to provide logistical support to other age	-1	0	-2	-1	
28	Without being directed, we would pursue the development of a unified co	0	0	2	2	
20	Authorities, procedures, and rules of engagement should be should be sea	2	2	1	1	
37	The capabilities of our medical units are adequate to support all-risk incid	-2	-2	-1	-1	
8	It is important to maintain existing agency relationships even as new ones	1	2	2	1	
13	The appropriate parameters are not well defined for future all-risk respons	2	1	1	2	
10	The interagency dispatch and coordination system must become more flex	3	1	1	0	
6	Our expertise is based on volunteerism, and can be sustained as a collatera	-1	-2	0	-2	
36	We can readily incorporate other non-NWCG assets, agencies, and organ	0	1	0	-1	
32	We are adequately trained to manage HAZMAT incidents.	-3	-3	-3	-2	
18	Legal ramifications, protections and insurance coverage for IMT's when t	2	1	0	1	
15	We need to do a better job of personal safety training for all-risk assignme	1	0	2	1	More Dissension
40	Our interagency business management handbook adequately addresses all-	-1	-3	-1	-3	
33	We are adequately trained to manage WMD incidents.	-3	-3	-3	-2	
26	We need to establish purchase authorities with timely reimbursement for s	0	0	-1	2	
29	We are appropriately trained to work in intergovernmental IC structures.	0	2	1	1	
31	We have sufficient expertise to meet the requirements of a large-scale all-r	-1	1	0	0	
34	We are able to coordinate and integrate information from a wide variety of	0	1	3	0	
5	We have the experience, process, roles, and relationships to manage large-	0	3	3	3	
25	We have appropriate PPE and other equipment for all-risk environments.	-2	-2	-3	0	
17	All-risk incidents may reduce the continued interest of IMT personnel.	2	-1	0	0	
1	The basic infrastructure in the wildland community is capable of supportin	-2	0	-2	0	
39	We have the human resources expertise required to handle a large volume	-1	1	0	-3	
16	We need to mentally prepare IMT personnel for the potential trauma and d	1	0	1	3	
4	Our current personnel configuration (membership, number) is appropriate	-2	-2	1	-1	
19	Some jurisdictional protectiveness prevents us from performing all-risk as	1	-1	0	2	
12	Current public laws and authorities do not allow for all-risk response.	0	0	-1	3	
3	We need to integrate personnel from other emergency management agenci	3	3	2	-1	
9	As we consider all-risk assignments, it is important to remember that we st	1	3	2	-1	
23	The line officers do not fully support all-risk incidents.	3	2	0	-2	
21	Pay incentives need to be restructured to attract top talent.	1	0	-2	1	
2	Competitive sourcing/downsizing will have a significant negagtive impact	1	-1	3	1	

* Range of responses:

–3	–2	–1	0	+1	+2	+3
Most Strongly Disagree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Most Strongly Agree

Appendix 3c: Q Analysis frequencies of respondents by group

Four groups emerged for which there were at least five respondents whose sorts corresponded significantly. In other words, these groups represent views or perspectives held in common by a set of at least five of the 57 people that responded to the survey. Of these 48 respondents loaded into these groups (9 participants did not load into these groups, but instead fell into groups that included only a few people). Twelve respondents loaded into two of the four groups.

	Total	Group 1	Group 2	Group 3	Group 4	No Group
Respondents	57	35	13	7	5	9
Respondents that loaded in two groups	12	12	6	3	3	0
Number that are women	5 (8.8%)	5	1	0	0	0
Average age	48.1	47.6	46.1	50.7	50.4	51.7
Average years of wildland fire service	26.3	25.4	27	27	28.8	30.1
Average years in overhead positions	17.4	17	19.4	18.9	21.4	17.0
Average years as a member of an IMT	12.6	12.6	14.1	11.1	15	11.7
Average years with current IMT	4.8	4.9	4.8	5.4	6	4.7
Average years in current position	4.6	4.7	3.9	5	8.2	5.4
Number that also hold a volunteer public safety position	17 (29.8%)	6	4	3	2	5
Number with military experience	14 (24.6%)	6	4	4	2	2
Average years of service	2.9	2.8	2.3	2.9	2	3
Number that were junior enlisted	5	4	1	0	2	1
Number that were NCO's/officers	9	2	3	4	0	1
Number that attended college	51 (89.5%)	32	12	6	4	9
Average years attended	4.2	4	3.8	4.5	4	4.2
Number that earned no degree	9	6	3	0	0	1
Number with certificate (highest)	1	0	1	0	0	0
Number with AA or AS (highest)	11	7	2	1	1	3
Number with BA or BS (highest)	24	14	6	3	3	4
Number with MA or MS (highest)	6	5	0	2	0	1
Average number of professional associations actively involved in	0.5	0.57	0.5	0.29	0.6	0.9

	Total	Group 1	Group 2	Group 3	Group 4	No Group
Level of government employment:						
Federal agencies	36 (63.2%)	21	8	5	3	6
State agencies	14 (24.6%)	10	3	1	2	1
Local agencies	7 (12.3%)	4	2	1	0	2
Number by region:						
Northern Rockies region	12 (21%)	7	4	0	1	2
Rocky Mountain region	3 (5.3%)	2	0	1	0	0
Southwest region	3 (5.3%)	0	1	1	1	0
Great Basin region	3 (5.3%)	2	0	0	2	0
California region	12 (21%)	6	3	1	0	4
Northwest region	8 (14%)	6	4	1	0	1
Southern Area region	16 (28.1%)	12	1	3	1	2
Number by role:						
Command	28 (49.1%)	16	6	4	2	5
Operations	8 (14%)	5	3	1	1	1
Plans	8 (14%)	6	1	1	0	1
Logistics	10 (17.5%)	5	3	1	2	2
Finance	3 (5.3%)	3	0	0	0	0
Average number of courses taken:						
In total	29.5 (of 90)	28.5	28.5	27.9	34.8	34.4
Skill courses	23.2 (of 66)	22.5	22.5	22.6	26.8	26.8
Incident command system courses	3.6 (of 6)	3.7	3.7	3.3	3.8	4.1
Dispatch courses	0.4 (of 3)	0.4	0.3	0.1	1	0.4
Job aids	0.9 (of 10)	0.7	0.8	1.0	1.8	1.6
Prescribed fire courses	1.3 (of 5)	1.2	1.2	0.9	1.4	1.6

Appendix 3d: Q Analysis exemplar comments in areas of general consensus

This is a representative compilation of the written comments respondents provided when asked to explain which statements they agreed or disagreed with *most*. All forty of the statements elicited very strong agreement or very strong disagreement from some respondents, except for statement 22, which most respondents disagreed with, but which none of the respondents sorted as statements that they disagreed with most strongly. The comments help to explain the reasons why respondents agreed or disagreed with each statement and to illustrate the nature and areas of consensus. For each statement, the parenthetical note indicates how respondents sorted the statement on average (refer to Appendix 3b). Note that the comments reported were made by those respondents who said that they agreed or disagreed *most* with a given statement, and therefore represent those with the strongest feelings.

Statements on which there is general consensus:
6, 7, 8, 10, 11, 13, 14, 15, 18, 20, 22, 24, 27, 28, 30, 32, 33, 35, 36, 37, 38, 40

6.   **Our expertise is based on volunteerism, and can be sustained as a collateral duty.**

   (Generally mild disagreement with this statement)

- If IMT's are expanded into terrorism, additional training requirements and assignments would jeopardize current job responsibilities.

- Most managers have yearly goals that are barely met now. Additional "volunteerism" can't be accepted by most team members without adverse effect both at work and home.

- The current system of relying on federal personnel to staff all-risk incidents will crash and cease to exist – It is broken and barely working.

- The strength of the wildfire system has been "the militia" –the folks with day jobs who answer the call while sacrificing personal and professional needs. With the "average" season requiring 2-3 months away (cumulatively), all-risk will ask for even more. Without some "reward" to the home office (such as funding) it will be difficult for line officers to support the continued involvement.

- We all have regular jobs to do. With declining budgets, competitive sourcing, etc., why should my supervisor fight for my position if I cannot be counted on at any given time of year to be there to do the job because I am part of an IMT and absent.

- We cannot expect agency administrators to continue to support IMT participation if we are gone from our normal jobs more and more.

- IMT is a full time job and not a collateral duty.

- We have always been a volunteer Army. We struggle to keep teams together because of team members' collateral duties. This will get worse as we extend our seasons and do more all-risk assignments.

- We're running short of "volunteers." We need to be directed to participate or increase incentives for those who do.

7. **We must understand the scope and depth of the existing FIRESCOPE Project which is inherently all-risk.**

   (Generally neutral about this statement)

   - Just as with the acceptance of ICS, much of the work has already been done on all-risk management. Do not reinvent it.

8. **It is important to maintain existing agency relationships even as new ones are established.**

   (Generally moderate agreement with this statement)

   - The relationships we have developed and nurtured thus far have been in large part responsible for our successes. We must continue.

   - Relationships have been the key ingredient to success on well-run incidents. People tend to want to help instead of blame or ignore others they have a good relationship with. Good relations make you "look out" for each other.

   - The success of an incident is dependent on the relationships with the local government/affected agency.

10. **The interagency dispatch and coordination system must become more flexible and adaptable to support all-risk incidents.**

    (Generally mild agreement with this statement)

    - All-risk incidents need the flexibility to name request and order appropriate resources regardless of cost or location.

    - It is important to have a smooth running dispatch and coordination system to adequately staff and equip the incident.

    - The lack of flexibility and at times apparent willingness to provide timely resources when requested is a situation that has been occurring and can only be amplified as the risk to human life becomes more pressing.

11. **The role and capacity of IMT's are well-understood general fire/emergency service community.**

    (Generally mild disagreement with this statement)

    - ICS is not understood by a lot of agencies; IMT's do not receive credit or respect for the job they are capable of.

    - We are forced to deal a lot with state and local and federal agencies that have little or no knowledge of this ICS and its utility.

    - The fire service understands the role of IMT, it's the non-emergency service that don't.

13. **The appropriate parameters are not well defined for future all-risk response. (There are scenarios to which it may not be appropriate for these teams to respond.)**

    (Generally moderate agreement with this statement)

    - It is a new arena, rules/standards/guidelines must be established.

- There may be certain circumstances that we do not have the technical expertise to manage.

- There will most likely come the day when an IMT is tasked with the wrong mission. There should be a "turn-down" process, were an IMT can negotiate the assignment. I'm not sure we can layout all possible scenarios in advance, nor should we, but comfort level for each team should be considered.

- What are the sideboards? How does a team turn down an assignment? Based on what? As far as I know, this is an open question that has not been discussed much if at all.

14. **It is important to think outside the box when ordering resources for all-risk incidents because typical wildland resources may not be the right tools for all-risk incidents.**

   (Generally moderate agreement with this statement)

   - Faced with a new or different situation – established process/system may not work well. Being flexible is extremely important.

   - IMT's can't have every possible skill attached to the team on a permanent basis so it is important to recognize when they need to order an additional person with a specific skill.

   - It is important to adjust the "normal" way of thinking into a positive change and to be able to shift, when applicable, through process into completely new scenarios.

   - In new areas of operation, we must keep an open mind and look for the best means to accomplish objectives.

   - We should remember that there are others outside the "wildland community" who can help in time of need.

   - No two incidents are alike and we need the flexibility to manage the incident we are "dealt."

15. **We need to do a better job of personal safety training for all-risk assignments.**

   (Generally mild agreement with this statement)

   - Safety is #1. We teach wildland fire safety but do not address all-risk.

   - Safety is always top priority. As we move into all-risk management we need to broaden our safety attitude and awareness to include risks we may not recognize.

   - We train our personnel to do their job; we train them how to be safe and protect themselves on a fire. We have not provided any training for personal safety in all-risk situations. We will react once there is a serious accident or fatality.

18. **Legal ramifications, protections and insurance coverage for IMT's when they accept all-risk incidents need to be addressed.**

   (Generally mild agreement with this statement)

   - It is important for IMT members to feel they are adequately protected so they can concentrate on their job.

- Legal issues have already been addressed for federal employees under the Federal Tort Claims Act. This includes "scope of duty," discretionary function, and civil liability. The Department of Justice and U.S. Attorney just need to provide a legal review for consistency.

20. Authorities, procedures, and rules of engagement should be seamless and clear across agencies and levels of government prior to the event.

(Generally moderate agreement with this statement)

- At all levels of government there must be clear, concise authorities, procedures, rules, etc., and all must agree and deal with all-risk to function effectively.

- Authorities should be clear. A National Response Plan would help here and is critical.

- Everyone must play by the same rules and understand who has what authority. The more work ahead of time the better.

- If we know how to play together up front then we won't have potentially devastating surprises on an incident.

- In order to be effective in managing all-risk incidents we need to simplify and clarify authorities, procedures, and processes to allow the teams the opportunity to be successful (whether they are is then up to them).

- It is important that these issues and additional business management practices are worked out and agreed upon in advance by individual who have the authority to make these decisions. Chances are that they won't be available when issues arise during and incident.

- The roles and responsibilities of IMT use need to be clearly established in laws and regulations by federal, state and local governments. This is our foundation for action.

24. We have adequate training, qualifications, and performance standards for all-risk incidents.

(Generally moderate disagreement with this statement)

- Wildland fire training does not prepare us for all-risk, nor do we have the funds or resources to supply PPE and additional training. The Forest Service has its own mission and cannot support all-risk incidents with out additional resources and funding.

- Training, qualifications, and performance standards need to be established to ensure that the ordering agency asks for the appropriate resource for the need of the incident, and the sending agency provides the appropriate resource to full that need. These standards are well defined for wildland incidents and as such, work well.

- We do need to establish adequate training and qualifications standards. We currently do not have any.

- We need to establish these elements for all-risk assignments as standards rather than develop them as a result of an incident.

- All-risk incidents use many of the same skills needed for wildfire, but some skills and risks need to be addressed. Through training in all-risk, many fears and apprehensions

may be alleviated to increase interest in all-risk and expand how personnel and management look at all-risk.

- The past year's history of floods, riots, earthquakes fires has led the way for a lot of experience for some. I believe that experience plays an initial role here. Not all teams have gotten this measure of experience.

- The current configuration, membership, training, and priority for teams is all wildland oriented. If we are to continue with all-risk incident management we must shift our focus. We will need more technical expertise, training, and equipment if we are going to be successful in all-risk incident management, broader based training, exercises, simulations, and revised standards are needed.

- The existing make-up of the team is not adequate for management needs of all-risk. We lack training, experience, skills in most other all-risk incidents. Most teams are made up of resource/forestry backgrounds that don't have the skill and knowledge in HAZMAT, volcanoes, and earthquake, etc. incidents that require other skill levels. We don't have structural engineers, search/rescue, law enforcement, etc. Team make up does not have other skills and experiences.

27. **We are comfortable managing sensitive information or intelligence.**

   (Generally neutral with this statement)

   - We are awkward in managing sensitive information. Incident management is based on the foundation of communication and obtaining and using relevant information. Information that seems secret to some is viewed as operationally relevant to IMT's.

   - As we incorporate "technical specialists" into the organization, managers base actions on their information being totally correct. If specialists give errant information, the outcome may not be desirable.

   - IMS is what it says: a "management system." The technical support will come from an unknown "person or source" when we accept all-risk. In good faith actions will be based on that intelligence and the IMT will accept responsibility for any actions and will be held accountable.

28. **Without being directed, we would pursue the development of a unified command with other agencies working on an incident to which we are assigned.**

   (Generally mild agreement with this statement)

   - The wildland community is well trained and versed in handling many types of complex incidents. This is hampered by potential for jurisdictional matters in "all-risk" situations. It can be mitigated by taking in and incorporating partners into the management system.

   - Our "interagency" attitude is extremely critical to our success in incident management.

   - Team strength comes from this interagency make-up. Authorities, rules, and procedures must be clearly defined for all agencies before the teams mobilize.

   - If we do not pursue unified command we are not doing our job whether it is on wildfires or all-risk. It is a tool and we need to use it.

- This is a common scenario, and we work under a unified command when necessary. It is important however, that all parties know and understand the IC system.

- We have been managing "all-risk" (floods, tornadoes, blizzards, ice storms, wildfires) with ICS since 1984. We have done large scale, long-term incidents many times. We always look for Unified Command when other agencies or jurisdictions have a part to play in the incident.

- As for the community that uses ICS, not all other organizations are familiar with the ICS management style. Not all agencies are familiar with each other's agencies or contacts. It seems that only local fire agencies that deal with everyday calls, (i.e. plane crashes, MCI, floods, normal day to day calls) get the training and experience.

- We work for all agencies (federal through local) and we integrate them into our process. Using local knowledge and information is a real key to success.

30. **We have the authority and ability to provide logistical support to other agencies working on an incident.**

    (Generally mild disagreement with this statement)

    - Payment processes, procurement authorities, and laws need to be amended changed or created to make all this work.

32. **We are adequately trained to manage HAZMAT incidents.**

    (Generally very strong disagreement with this statement)

    - Our IMT does not have HAZMAT training or experience. We would have to rely on ordered resources to provide that.

    - I know we do not adequately train our operations, safety, and logistics personnel on IMT's in HAZMAT.

    - All-risk incident management implies that these teams have some level of training or background. Being predominately dedicated to wildland fire, most have had little exposure to HAZMAT, WMD, and other technical fields. Providing IMT's broad base training would be necessary.

    - Many of the IMT personnel are not adequately trained to manage HAZMAT incidents – yes, technical specialists can be brought in.

    - Most team members are not trained to handle HAZMAT incidents.

    - A good IMT knows how to get correct resources to do this function.

    - This statement says that IMT's are prepared for things that I <u>strongly</u> feel we are not prepared to handle. We don't have the training, equipment, experience, etc. to respond to HAZMAT/WMD.

    - We are clearly not trained to manage HAZMAT and would need to bring that expertise into the command and general staff.

    - We are not adequately trained to handle HAZMAT, but we know were to find people that are.

- We are trained at a very basic level.

- We currently receive no training in dealing with HAZMAT/WMD and are ill prepared to handle those scenarios or what support those individuals that are trained need to accomplish in a safe environment.

- We don't specifically train for HAZMAT incidents, however could implement ICS as appropriate.

- We have heavily relied on local, state and EPA to handle these types of incidents.

- We have never had any specific training on HAZMAT, WMD, etc. type response. The management will be the same –just different technical specialists added. We need more training here.

- Just have basic training, would require many specialists.

33. **We are adequately trained to manage WMD (weapons of mass destruction) incidents.**

   (Generally very strong disagreement with this statement)

- All-risk incidents can be very complex, dangerous, and outside our normal expertise in which we have had some formal training. We (IMT's) need to recognize what type of assignments or incidents that we can perform, and HAZMAT and WMD are serious incidents. We could play a role in the ICS system, but I am not sure we would be a good candidate for a leading agency for control/authority.

- We have no training in any of these areas. We are not able to offer this training to our personnel due to "outside of our job." Our training is solely in fire to date.

- At the present time I don't think our IMT's are capable of responding to major biological/nuclear incidents.

- After polling my IMT this issue was the only reservation to accepting an all-risk assignment.

- All IMT's have is an excellent incident management system and the ability to get a mission done by managing people –I doubt we will ever be adequately trained to manage WMD.

- As a local government employee I have received WMD training and the rest of my IMT personnel have none. This would be a need for operations, safety, and logistics.

- I have no idea what would be required.

- I do not believe IMT's have dealt with or been trained in weapons of mass destruction and this has huge implications.

- I feel no IMT is fully trained in this field. However, I also feel that a qualified IMT knows how to find resources that can.

- I have a difficult time even imagining what these would be like.

- I most strongly disagree with this issue because we cannot comprehend currently, what that "weapon of mass destruction" might look like. The weapon can be munitions, nuclear, biological, etc. and how does anyone prepare for that?

- It's obvious that technical knowledge and abilities would be the exception, not the rule, for IMT personnel. It would be ridiculous to think we should do this.

- Most of our IMT members have little or no knowledge of WMD. However, this could be overcome by the hiring of a cadre of Technical Specialists (WMD).

- Same problems as HAZMAT, but exponentially less adequate.

- This sure wasn't part of my training.

- We are in no way trained to manage WMD incidents, except in that ICS is applicable and we know how to implement that.

- We are not trained to manage WMD incidents, however we are trained to manage any long term incident.

- We are not trained to specifically manage WMD, however we are trained to manage the people to deal with all incidents, including WMD. I believe we would need to have someone with the team to raise our awareness, safety, and knowledge of what we are managing.

- We do not have the training, experience or personal protection equipment to manage these types of incidents.

- We have no training what-so-ever to handle such incidents. I'm not sure I understand who the players are. I'm sure that the other players in such an incident doesn't know who we (IMT's) are. We need some interface if a WMD response will be required by us.

- We have not had any WMD training.

- While our organizational structure allows us to manage a "scene," we are in no way prepared – mentally or physically – to be asked to respond to biological, chemical or nuclear WMD.

- WMD perhaps offer the greatest unknown to the IMT and represent danger to the team as well as incident personnel.

- We aren't trained to respond to these. We may manage technical experts, but we have no technical expertise here.

- IMT's would order technical specialists in areas of WMD to ensure that voids in the team configuration were adequately filled to appropriately address the situation.

- IMT's are certainly not trained or prepared to manage WMD incidents. Spouses are likely to say "not my husband (or wife)." The hazards have to be openly known, compensated for, and allow those who do not want to participate to "bow out gracefully."

35. **Funding criteria and sources for personnel and equipment are clear, appropriate, and consistent.**

(Generally strong disagreement with this statement)

- As became apparent funding the Columbia Incident, funding for all-risk is about as clear as a chocolate shake – and most of our sources of equipment, personnel, etc. were dried up because these issues are unclear.

- We must deal with two problems: Base 8 and how to keep state and local individuals involved.

- From the "all-risk" assignments I've been involved with we've been told to do the job and we'll figure out how to apply the respective criteria as we go through the scenario. Funding is used as a constraint once the IMT has arrived. State and local resources are not available because there is no consistent policy and those individuals have to take vacation.

- Mass confusion existed on Columbia on whether states could be compensated and when federal funds were coming.

- Funding is so fundamental to all who control the resources that are needed for any incident. A separate means of funding IMT and all-risk incidents needs to be established or we will set ourselves up for failure.

- Funding/equipment still causes grief…new high tech exposures are likely to cost more; needs to be understood, new tools might be critical as well.

- No consistency or direction. Most after the fact.

- Our line mangers do not yet know who paid for what on the Columbia Recovery effort.

37. **The capabilities of our medical units are adequate to support all-risk incidents.**

   (Generally mild disagreement with this statement)

- We currently do not select from the best cadre available to fill our medical needs. We currently rely on agency personnel that have a very limited scope of experience compared to full-time paid departments whose medical people are better trained and have much more exposure.

- All-risk incidents, in many cases, deal with large groups/areas of people. With an increase in numbers of illness from common cold upward to injury/death, increases in medical staff needs to be addressed. With this come issues of new health regulations/laws like HEPA. Also safety (health) of the fire fighter and citizens is always #1 importance so medical expertise in units should be of equal importance.

- Medical capabilities are a key to all-risk incidents with human dimensions. In incidents were people are the focus immense amounts of work needs to go into public health.

- Medical unit positions are some of the hardest positions to fill on IMT.

- Our medical units are not staffed nor equipped to deal with multiple injuries or multiple fatalities at one time. This could be overcome.

- Present medical units are not equipped for anything more than blisters, minor injuries, minor sickness, etc.

- The medical unit needs additional training on the various biological agents, toxins, etc. that IMT's could be exposed to.

- I feel the medical group should be run by full time qualified medical personnel only.

38. We can easily work with agencies that are unaccustomed to ICS.

(Generally moderate disagreement with this statement)

- ICS is the "language" of incidents. There is necessary pre-work to get others fluent, then the whole experience, training, and qualifications basis for team positions working.

- Agencies that don't use ICS lack the management processes required to effectively manage an incident. They also lack the vocabulary required to share vital information and to participate in the management of the incident.

- It is difficult to work with anyone where you don't talk the same language.

- Experience has taught me it is a big, time-consuming hurdle to work with agencies that are unaccustomed to ICS.

- I think it will take a lot of work to get other agencies to work with ICS, as we know it. Many in the fire service are using a different management system that the national fire academy has adopted.

- ICS is the common context that diverse agencies can function from.

- If we are all using the same terminology, qualifications, and job descriptions, we can all perform the mission. When we don't, it takes a lot of re-training to get the job done. This is irrespective of rank or GS-level.

- The understanding and use of ICS and having common terminology is the basis to our success.

- We can work with other agencies, but those unaccustomed to ICS are reluctant to be "easy" to work with.

- Working with other agencies who are not trained in ICS is a test of patience – but it is rewarding…

40. Our interagency business management handbook adequately addresses all-risk incidents.

(Generally strong disagreement with this statement)

- A lot of work needs to be done to the interagency business management handbook so that all agencies are operating under the same business practices.

- The interagency management handbook need to be revisited.

- Our current interagency business management handbook was written based on wildland fire management, and does not take the unique business/contracted relationships of all-risk into account.

- Our interagency business handbook has not caught up with the ever-evolving all-risk issues and concerns.

- The fire business management handbook is just that: fire. While many of the same principles will apply, it will need updating to address issues associated with all-risk.

- The handbook was written by fire business people and really does not address all-risk incidents. If it did we would not have to issue specific "clarification letters" for each one.

- We struggle with direction that we get during fire season regarding length of shifts, R&R, etc. These policies should be clear and we should go to the handbook for direction. The inability to pay States and State employees is ridiculous and should be addressed in the handbook.

Appendix 3e: Q Analysis exemplar comments in areas of dissension

This is a representative compilation of the written comments respondents provided when asked to explain which statements they agreed or disagreed with *most*. All forty of the statements elicited very strong agreement or very strong disagreement from some respondents, except for statement 22, which most respondents disagreed with, but which none of the respondents sorted as statements that they disagreed with most strongly. These comments help to explain the reasons why respondents agreed or disagreed with each statement and to illustrate the nature and areas of lack of consensus about the statements.

Statements on which there is a general lack of consensus:
1, 2, 3, 4, 5, 9, 12, 16, 17, 19, 21, 23, 25, 26, 29, 31, 34, 36, 39

1. **The basic infrastructure (cache system, resource allocations, funding mechanisms) in the wildland community is capable of supporting all-risk requirements.**

   - As far as the basics this statement is true.

   - The wildland community is more capable than any other group of handling an all-risk assignment.

   - All-risk incidents bring expanded or different needs often. Current caches do not address those. Yet basic items like sleeping bags and tents are common to any incident.

   - The cache system is not prepared for all-risk (hurricanes, floods, tornadoes, ice storms, etc.).

   - The current infrastructure is based primarily on wildland fire fighting.

   - Currently teams are exposed by not being supported by the system. Many quick decisions have to be made before approval or determined legal.

   - The current cache system is usually focused on only fire.

   - In order to be a major player in all-risk situations we must adjust our basic infrastructure, funding mechanisms, personnel, etc. in order to be effective on a long-term basis.

   - The support infrastructure for wildland fires can barely service fire's needs in a busy year, and it's unrealistic and unfair to view it any other way.

2. **Competitive sourcing/downsizing will have a significant negative impact on federal/state/local agencies' ability to respond to all-risk incidents.**

   - Our current work forces are downsizing and we are losing a lot of our experience base thru retirement.

   - As agencies continue to downsize, the number of personnel available for team assignments will also shrink. Someone will have to stay at home units to do required work.

   - Competitive sourcing has the potential to wreck the Forest Service, and if that happens it will seriously compromise our ability to respond to any emergency, including all-risk.

- Competitive sourcing will compromise the training and experience qualification pipeline for future IMT personnel.

- Competitive sourcing will deplete the teams of very necessary resources, such as CTSP –a very critical role on every team.

- The move for competitive sourcing will impact greatly, especially the logistics sections.

- A76 is going the put a real hurt on us because we will lose most if not all of our non-fire people.

- Competitive sourcing done well is a positive. Don't we want the best performing unit that is efficient and effective?

- Competitive sourcing/downsizing is only a problem if you make the assumption that these people are no longer available to be part of IMT's or assigned to incidents. We have authorities in existence today to hire people who are not federal/state/local employees.

- The current model of using non-fire personnel is going away, competitive sourcing will just increase it. But that is OK because we have lost a lot more individuals for other reasons. We must change the idea that "build it and the IMT members will come."

3. **We need to integrate personnel from other emergency management agencies to broaden our experience base and overall depth.**

- All-risk expertise comes from varied/diverse agencies and personnel.

- As we downsize other agencies will become a candidate pool for recruitment. They may also have the technical personnel, training for elements of all-risk situations we may encounter.

- Effective leadership comes from experience, process, clear roles, and responsibilities. The people come from all walks of life/organizations. Your highest performing teams value diversity of thought, agency experience, and wisdom.

- When searching for the right processes, procedures, and resources you need to bring in outside resources. On IMT's one of the successes of our teams has been the interagency personnel. Their experiences are different and often contribute significantly to the objectives or tasks.

- IMT's have management expertise, but may lack operational expertise absent team members with all-risk training and experience.

- No one of us is as smart as all of us.

- The salvation to maintain the number of teams that we have nationally will have to come from agencies that we do not draw from currently.

- We need to broaden our expertise if we join the all-risk arena.

- We struggle to maintain viable IMT's for wildland fire. We must recruit and integrate from al levels of government and a wide variety of emergency service disciplines.

- Time, money, and the level of commitment will dictate the level of involvement of some agencies in all-risk incidents. To meet the needs of all-risk incidents IMT's must become more flexible to seek out other qualified people (technical specialists) and integrate them into the ICS system to get the job done, fulfill key roles and learn together from these experiences. We need to share knowledge and information to work together more effectively.

- When IMT's begin integrating personnel from other agencies and sectors from federal, local, and state as well as private, the experience base widens making the IMT more rounded. They also can draw on the experience of these individuals to help come up with solutions/experiences etc., to assist in a variety of all-risk. With a wider or broader personnel group the ability to work with a variety of agencies increase since the personnel are able to "speak the community" language and know other agencies need. Also personnel begin to think of themselves not as federal but as a community or national resource and those biases become less.

- Because of downsizing of all agencies, this is very important for success.

4. **Our current personnel configuration (membership, number of personnel, etc.) is appropriate for all-risk response.**

- The purpose of the IMT is to provide a structure that allows us to manage an incident. We are a complete foundation with the knowledge and ability to request "professional resources" with the expertise necessary to handle the incident. We do not need to know everything, just how to get everything.

- Our main function is to "fight fire" – thru training, job, and experience. Only until recently have we ventured out. We have the ability to be flexible and adapt as the incident progresses.

- Teams need to be configured to handle all-risk – fire teams that exist today can't and will not be able to handle and manage all-risk incidents. These need to be special teams with a broad background and special training.

- All-risk may require more personnel or in some cases less personnel depending on incidents. (e.g. Air Ops may not be needed, but medical many need added resources.)

- Many IMT's have few personnel with all-risk training and experience. Enhancing the existing IMT's with the additional of personnel with all-risk training and experience is the most efficient, cost effective method of providing IMT's to manage all-risk incidents.

- Most teams are presently short handed.

- The current configuration, membership, training, and priority for teams is all wildland oriented. If we are to continue with all-risk incident management we must shift our focus. We will need more technical expertise, training, and equipment if we are going to be successful in all-risk incident management, broader based training, exercises, simulations, and revised standards are needed.

- Our current personnel configuration is not appropriate.

- The existing make-up of the team is not adequate for management needs of all-risk. We lack training, experience, skills in most other all-risk incidents. Most teams are made up of resource/forestry backgrounds that don't have the skill and knowledge in HAZMAT, volcanoes, and earthquake, etc. incidents that require other skill levels. We don't have structural engineers, search/rescue, law enforcement, etc. Team make up does not have other skills and experiences.

5. We have the experience, process, roles, and relationships to manage large-scale, long-term incidents.

- My agreement with this statement comes from a comfort level of experience gained over time and training and preparedness.

- Having been an IMT member for the past 15 years, we have the knowledge and expertise and experience.

- IMT's have a "can do" attitude. I truly believe that Type I teams can handle most anything thrown at them. At the very least we can figure out how to accomplish the mission, even if we have to seek "outside" help.

- IMT's bring the ability to organize and support large numbers of personnel with the ICS structure and planning process.

- IMT's have been managing these incidents for decades. The management processes are the same regardless of the type of incident.

- IMT's have been trained and used to manage incidents for years. The experience, process, etc. has been proven.

- My experience in emergency incident command from the IMT side and from the local government side says only the wildland IMT's have the experience to manage large scale disasters. Local government "doesn't know what they don't know" and blindly manages disasters without experience. Add in a rank conscious environment with a lack of cooperative "unified command" background, major problems continue.

- Repeated successful assignments of 21 + days have been accomplished.

- That is what we do best.

- We have been managing "all-risk" (floods, tornadoes, blizzards, ice storms, wildfires) with ICS since 1984. We have done large scale, long-term incidents many times.

- We've been using ICS for 30 yrs and are very skilled at applying it.

- Experience, process, roles, and relationships shouldn't change a lot from our fire role.

- Faced with a new or different situation – established process/system may not work well.

9. As we consider all-risk assignments, it is important to remember that we still have to fight wildland fire.

- We must remember that we will continue to be needed and used most frequently on wildland/wildland interface fires.

- If we "wildland fire agencies" commit our most valuable and experienced resource to all-risk teams it could have serious impacts on our pre-suppression, suppression and fuels programs. It could cause safety concerns for our wildland fire fighters and put our natural resources at risk.

- IMT's need to be available for wildfires or the land management agencies will quickly loose interest and withdraw their support from all-risk incidents because wildfire incidents management is a primary part of their mission.

- Regardless of the decision made regarding all-risk assignments, one of the primary missions of the Forest Service is wildland fire – either through suppression action, prescribed fire, or fire use. It will remain our priority.

- The reason these IMT's exist is to suppress (or manage) large complex wildland fires when if we lose team members because they don't want to participate in all-risk assignments we also lose our ability to meet the need of managing large fires.

- We still have our day jobs – and still have fire to deal with.

- For most of us in land management agencies, we still have the responsibility for wildland fire suppression.

- Although we, as IMT's, developed as a response to wildfire, this may not be the highest priority on a national scale.

- Wildland fire will become an all-risk assignment therefore we will not have to be reminded.

12. **Current public laws and authorities do not allow for all-risk response.**

- Laws don't allow all-risk response. Our state cooperators are unable to participate without Presidential declaration and imminent threat to human life and property.

- The current authorities leave out the state and local IMT members for some all-risk assignments to the point where teams are not available.

- We need to know and have authority and laws in order to respond.

- Current laws allow for all-risk response – otherwise we wouldn't be doing it. I believe there needs to be some reconciliation process.

16. **We need to mentally prepare IMT personnel for the potential for trauma and death associated with all-risk incidents.**

- IMT's need to be prepared, trained, etc. to effectively deal with what I envision we could be exposed to in all-risk incidents.

- Unless an individual experienced wartime or has an occupation that is frequently dealing with trauma or death, most of the rest of us would require some way of dealing with this situation.

- This is very important to avoid an incident on an incident.

- Generally wildland involves property – lives require another mindset.

17. All-risk incidents may reduce the continued interest of IMT personnel.

- All-risk is not well defined. The parameters have not been given any thought, its up to the imagination, team members have a right to know what the possibilities are. Some team members have expressed concern, what are they going to get into?

- I am struggling to keep an IMT together just for the four-month fire season. Taking on additional workload doesn't seem prudent, even if necessary.

- IMT's in my region are struggling to maintain full rosters even without the addition of all-risk responsibilities. Adding all-risk will create a predictable decline in participation.

- Personnel must be at least minimally comfortable to function.

- We have been losing IMT's for the past 10 years. As we ask people to participate more we will lose more people and more teams.

- We struggle to balance work, family, and IMT participation another workload will just add more pressure to the situation.

- To fire and all-risk could have teams on standby or activated in large portion of the year. Regular responsibilities to the jobs that we were hired to do would suffer. Families can also be affected by time spent away.

- I believe, if it will make a difference, it will be the opposite and that interest will increase not decrease. Most people on IMT's like the thrill, excitement, and challenge.

- I have not heard of any IMT member to date that has turned down an assignment that wasn't a wildfire. IMT members are action junkies who will take any assignment offered.

- Most are in this because they like the challenge of "managing" and we don't care what it is we manage.

- The idea that all-risk incidents may reduce the continued interest of IMT personnel is a myth, at least for Type-1 teams.

19. Some jurisdictional protectiveness prevents us from performing all-risk assignments; some agencies may not accept us without a clear delegation of authority.

- Often the agencies with the technical expertise in the incident arena insist on being the ones to manage the incident. Some agencies fail to recognize their lack of expertise in incident management and are reluctant to relinquish "incident management' to an IMT of "Forest Service People." Sometimes an IMT is dispatched and then underutilized. A clear delegation of authority would help clear all this up, spell out what the IMT is there for, expected to do, and so on.

- From reading and listening to after action reports, and experience first hand on similar responses there is a common theme on large-scale incidents. FBI, EPA, Capital Hill Chief Architect, all think there is no use for unified command, do not want to recognize your need to be here, or do not want to allow you to manage the incident. We need their help and expertise, but we need to be allowed to do our job. Turf battles and jurisdictional issues must be settled so when an incident management team comes into

manage, everyone is focused on the mission, not politics. We are employed by the citizens with the understanding and expectation that things will get better after/because we arrived, and not become part of the problem or bring our own problems. Mission must be over pride, ego, and jurisdiction.

- Having clear authority is the cornerstone from which all activities flow, especially under stressful conditions.

- On most incidents IMT's, the first couple of shifts are spent resolving jurisdictional issues.

- We have consistently had this problem with our state emergency management division on natural disaster responses. They want us to manage the recovery with our IMT, but do not want to give us the delegation.

21. Pay incentives need to be restructured to attract top talent.

- Funding is critical and we do not have this worked out and we cannot reach talented people due to pay and procurement issues.

- Agencies must support and recognize the importance and value to the public IMT's serve. Priorities must be set at the highest level to ensure commitment. Individuals willing to serve should be provided with appropriate training, protection, and pay.

- Pay incentives would help recruit employees especially if we go all-risk. True overtime is lost.

- Pay inequities are a major source of irritation and disagreement for all incidents.

- I do not believe pay is an issue. Most of us in the IMT top out and work free during the summer as it is.

- I think most people are adequately paid.

- Pay or grade levels are not what builds good teams. Most of us do this because of a sense of dedication, pride, patriotism and the idea that we can truly help.

- Top talent and qualified personnel are not interchangeable terms. In this case pay should not be an issue.

- The idea of paying or rewarding people for their effort is commendable. The idea that it will attract "top people" is questionable. I am sure that it would attract people who are interested in maximizing their income.

23. Current wildland fire agency missions do not address all-risk incidents, therefore the line officers do not fully support all-risk incidents.

- We do not have line officer support; most of the people on teams have other jobs they must function in.

- Rules and regulations need to be clearly articulated to administrators in all agencies if line officers are going to support agency participation on teams for all–risk.

- If we are to enter (or remain) in this arena, it has to be a documented acceptance of this mission by all agencies.

- It is part of our mission and funding to support fire, but it is not our local mission or funding to support all-risk.

- Line officers do not support all-risk. Expectations for support of the Columbia shuttle recovery in the fire service came through fire, not through line officers. Similarly, BLM employees were not available.

- Line officers do not support large fire needs. How can we expect them to support non-fire, non-agency incidents. The line officers have their own agenda; most don't care about helping support other needs.

- Participation in all-risk assignments has been an ongoing problem. Although there are 10+COML and 10+GSUL in R-1, none were available for shuttle recovery from R-1.

- We do not have line officer support.

- Without line officer support an IMT is subject to failure. Resources and personnel are difficult to come by and work back home piles up. To take this one step further, line officers should be tasked by their supervisors to meet these missions. The support needs to start at the department head level, and passed to the agency head, and so on.

- I believe if wildland fire agencies addressed all-risk incidents being as supportive as they are for wildfire from upper management down, all-risk incidents would have the same importance. Managers would then not be reluctant to release personnel and other resources for all-risk. The agency would make a commitment to fire as well as all-risk, thereby realizing and eliminating some issues such as training for all-risk funds, availability, etc.

- Line officers are focused to all-risk.

- There is a lack of line officer support at forest and district level within the Forest Service, in spite of direction from Chief and Region. Many question our role to participate in all-risk incidents.

25. **We have appropriate PPE and other equipment for all-risk environments.**

- It was clear with the Columbia shuttle recovery that fire PPE was not adequate to the task of fighting through briars and brambles.

- Only PPE is geared to firefighting.

- Our PPE and equipment is based on use during summer fire season, and all-risk means all seasons/all weather.

- Our current PPE is wildland fire only.

- We have the ability to be flexible and adapt as the incident progresses.

- We do not have appropriate PPE, but we know where to get it.

26. **We need to establish purchase authorities with timely reimbursement for state/local IMT's so as not to compromise fiscal responsibilities or budgets.**

- Especially state and local governments need timely reimbursement or they can't afford to play/participate in all-risk.

- Being from a State team, if you cannot purchase immediately upon arrival or while in travel your mission will fail. Reimbursements to home units are important. The state fiscal year is not in line with the federal year.

- It seems that money is a big driver on the track and quite often decides who "plays" and at what level.

29. We are appropriately trained to work in intergovernmental incident command structures.

- Our training and experience has proven we can work with different government agencies at all levels.

- This is proven over the years of interagency IMT's and assignments.

- We have decades of experience in working with interagency IMT's.

- Training is but a small part of the whole experience…it's what is learned on each and every incident and how the necessary adjustments we made to accommodate the situation.

- The cornerstones of IMT's are common experience and communication. The key to having a good IMT's is to let them manage incidents constantly. It's similar to war fighting. No amount of training is worth one bit more than battlefield experience.

31. We have sufficient expertise to meet the requirements of a large-scale all-risk incident.

- Having been an IMT member for the past 15 years we have the knowledge and expertise and experience.

- Only the wildland IMT's have the experience to manage large scale disasters.

- Results from the shuttle recovery indicate that the IMT's do indeed possess this expertise.

- If we need specific expertise to deal with "HAZMAT," oil fires, munitions, etc…we would resource order the necessary experts, and this becomes easier with a unified command with agencies already having that knowledge.

- The national IMT's are "world class" managers that function cohesively as a team, are inclusive (with other agencies/local governments/etc.) in decision making process, have high standards for qualification, are committed to response when called on – no matter the emergency, and have the years of experience, necessary to address and manage any incident assigned. It would be a travesty, and a disservice to the public not to use the best of the best for all-risk assignments.

34. We are able to coordinate and integrate information from a wide variety of agencies.

- I believe because our region is strongly involved in inter-agency personnel and we depend on this in our area.

- The current system is designed to accommodate and value other agencies inputs and we seem to be very successful in meeting that counsel.

36. We can readily incorporate other non-NWCG assets, agencies, and organizations into our management system.

- The incident management system "as it currently is" is designed to readily incorporate others, and changing it may make it "yours," but it may not make it work.

- We are forced to deal a lot with state and local and federal agencies that have little or no knowledge of this ICS and its utility.

- We have a very heavily scrutinized process for qualifications with almost no flexibility, without some major changes integrating outside resources will b a long and painful journey.

- I believe that experience plays an initial role here. Not all teams have gotten this measure of experience.

- Many in the emergency management. field have not endorsed/embraced ICS as "the Tool" for managing incidents, therefore making it difficult for the wildland community to work with them in an organized system. Likewise, we lack basic infrastructure to operate a full-blown incident without their talents, knowledge, and manpower.

39. We have the human resources expertise required to handle a large volume of interactions with outside agencies and contract crews.

- I disagree due to the fact that contract crews/agencies know ICS but it is interpreted differently.

Appendix 4: Characteristics of good incident management

The following is the complete, unedited list of responses provided by participants in response to the question: "What are the characteristics of effective incident management?" The responses have been arranged into the following six broad categories: command/leadership; team dynamics; Communications/Interpersonal relationships; mission/operations/objectives; resources/support; and training/expertise/experience.

Command/Leadership

- Core IMT management (especially the IC) team needs to be all-risk aware, but more importantly skilled at people, team, external, agency management.
- Ability to be problem solvers
- Ability to think outside the box to obtain the necessary tools to function efficiently
- Need to understand the chain of command as it refers to ICS.
- We all use ICS but interpretation as to what it is varies.
- Ability to bring order to chaos
- A safe, organized incident operation
- Understand and consistently use the Incident Command System (ICS)
- Follow a schedule and the ICS planning process
- Don't let bureaucracy block accomplishing the mission
- Establish operating protocol and leadership
- Recognizes their limitations and communicate that to these people there working for/with.
- Understanding roles and responsibilities
- Organizational model, e.g. ICS, needs to be the standard for all agencies
- Agree on process (ICS, Planning cycle, etc.)
- Good incident management demonstrates that the safety and welfare of crews and other incident personnel are foremost.
- Possess an accepted decision making process.
- Honest feedback throughout the duration of the incident.
- Ability of IMT's to anticipate problem, react to them, and solve their own problems.
- Adaptable and responsive to rapidly changing conditions
- Well organized, established, and experienced IMT
- Clearly defined priorities and objectives agreed on by unified command/team
- Providing for the well being of incident personnel.
- Exercises the inherent flexibility built into ICS-NIIMS style. Adapt to changing conditions while maintaining focus on primary mission.
- Think 72 hours out front – "Plan 3 days ahead, take them a day at a time" – "Only something that surprises you can hurt you".
- Effective/efficient transition
- Foster a positive environment
- Utilizes ICS
- A successful team utilizes the span of control to manage an incident

Team dynamics

- Compatible personalities both internal and exernal to the team proper.
- Shared team vision and their role in supporting it
- High degree of team cohesion "synergism"
- Experienced, pre-established members with history of working/training together successfully
- Understanding the importance of team make-up, personality, and the relationships that have evolved over years of working together as a team under emergency conditions. This fact/concept provides huge synergistic advantages and capabilities over a thrown together or "make up" team of responders.
- Well-defined roles within the team.
- Team members understand their role and the roles of others
- Good team dynamics
- Good team charisma – a team identity where all the egos are left at the door.
- Functioning effectively as a team.
- Appropriate team training/experience.

Communications/Interpersonal relationships

- Communication, coordination, cooperation
- Provide timely accurate information to public and agency(s)
- Set up logistical support for communications. And to support personnel quickly- this requires a sense of urgency.
- Early planning cycle and meetings and plans are all very powerful communication tool
- Good, consistent, all-around communication.
- High-value is placed on relational or inter-personal skills. A higher value is placed on this than technical expertise.
- Open/clear/concise communication (constructive criticism)
- Reasonable team member accessibility by others
- Good interpersonal relationships
- Good communication skills.
- Good communications and coordination
- Communication and coordination within team
- Committed to active communications and listening
- Communications about the incident prior to take over and at take over
- Good incident briefings, either internal or transition
- Good communications and coordination with all parties and agencies involved in incident

Mission/operations/objectives

- Good incident management is sensitive to concerns and welfare of the affected public.
- Good incident management requires clear and attainable objectives that include the political, social, and financial as well as safety and operational concerns.
- Focused on meeting customers needs
- Teams use clear incident objectives

- Teams are flexible to deal with unexpected events
- Adaptable/flexible to meet the needs of incident management
- Incorporate current intelligence into planning and operations.
- Understand the mission. If it is not clear, make it clear
- Complete problem solving
- Recognizing short-term and developing a plan for long-term resolution
- Expect the unexpected, recognize change and make the necessary adjustments.
- Obtainable goals
- IMT's have good operation protocols
- Service oriented.
- Incident at large clearly defined and properly exercised authority
- Clearly defined mission/objectives

Resources/support

- Clear delegation/clear negotiated delegation
- Nationwide coordination centers and dispatch system
- System by which individuals are available as needed year around
- Supportive of each other and supported by home agency.
- Clear direction from agency, helping to facilitate goal setting.
- Good incident management balances cost effectiveness against attainment of other objectives
- Funding
- Fiscal responsibility
- Support from members of home unit
- Consistent participation
- Need to abide to PPE (Personnel protective gear) set by team.
- Clear direction/expectations/delegated authority
- Positions are staffed by qualification, not rank.
- Timely response of appropriate resources
- Efficient and effective use of resources
- Accessible/responsive agency administrators/reps
- Effective resource ordering/coordination
- Delegation of Authority needs to be relevant, realistic, and clear in its direction
- Clear delegation of authority and clear expectations
- Host agency support and availability to agency administrator/agency rep
- Appropriate resources to manage
- Consideration/application of all jurisdictional authorities. (Effectively utilize unified command)
- Incident managed with fiscal responsibility with cost containment emphasized
- Appropriate technology/resources to perform (computers, GIS, capability, etc.)
- Support from home and agency for periodic long-term assignments
- Utilizing effective use of resources available
- Flexibility of dispatch/host agency to get needed resources
- Ability to order appropriate resources (regardless of pay issues –i.e. Portal to Portal)

Interagency relationships

- Receiving agencies must allow the IMT to manage the incidents
- Community/affected agency involvement
- Knowledge and experience, exposure of working with local, State, and other gov't agencies and tribes.
- LO/Authorized Agency rep understanding of their agency mission and goals.
- Need to interact with team not just who hired them.
- Keep the agency administrators included and informed
- Interagency/interdisciplinary
- "Inter-agency" involvement assembles a wider scope of strengths to give the team greater depth and potential for success.
- Good cooperation between agencies
- "None of us is as smart as all of us!"
- Nationwide agreement with State and Local agencies for national emergencies.
- Team composition is interagency in nature.
- Good incident management addresses all affected agencies' concerns
- Good interagency coordination in filling key resource needs, (i.e. specialists for non-fire related activities.
- Coordination with local agencies fully utilizes their expertise by incorporating them into the management of the incident.
- Educate as well as manage
- Tempering agency bios

Professionalism/Behavior/Attitude/Orientation

- Team's image – how they are perceived.
- Qualified, experienced, committed people willing to make tough decisions with political/Social Sensitivity while functioning as an effective team.
- Need to develop acceptable behavior (e.g. drinking, being on-time, briefings, etc.)
- Need to stay at fire camp, not on their own.
- Team members develop and maintain good working relationships
- Humble professionalism
- Team members have a long history and experience working together – they are high performance teams.
- Internal integrity and accountability displaying, creating, and fostering an atmosphere that everyone assigned contributes and participates equally as part of the team.
- Projects quiet competence ("professional")
- Long-term practical experience as a team or in the team environment allows us to adapt to local issues quicker. We are "mission" oriented, not "ego" driven.
- Adaptability
- Flexibility
- Maintaining rigid flexibility
- Recognizes and accepts our culture and fosters our core values of safety, trust, respect, working hard, and having fun.

- Flexibility and adaptability regardless of assignment and circumstances.
- Possess a professional attitude.
- Trust
- That all responders have a clear understanding of their mission, focus, and the incident command system with a recognition that they may not be in charge. Regardless of their authority, responders must check their egos and existing rank structure at the door.
- Political and social sensitivity
- Willing to make tough decisions
- Team knows limitations and strengths
- Positive attitude/ego

Training/expertise/experience

- Good training/mentoring program
- Exposure and experience to different types of incidents
- Functional competence/expertise by all IMT personnel
- Collective KSA's of team members to collectively collaborate and foster a successful outcome
- Teams get practical experience to validate their training exercises. "They do it each year"
- Team members willing to cross-train/function
- Team members need to possess appropriate knowledge, skills, and abilities (and experience) for their functions
- Varied experience
- Rigorous training and technical expertise
- A blend of diverse backgrounds, training, and experience.
- Teams need multi-skills (diverse in all-risk) i.e. Operation Section Chief skilled in urban environment.
- The value of experience of processes and systems that have been tried and evaluated
- Qualified, experienced and committed people
- Approval and utilization of trainees

Appendix 5a: Selected references on wildfire and natural resource policy and management

Bureau of Indian Affairs fire and aviation management: www.bianifc.org/

Bureau of Land Management office of fire and aviation: www.fire.blm.gov

Federal Emergency Management Agency: www.fema.gov

FIRESCOPE (FIrefighting RESources of California Organized for Potential Emergencies): firescope.oes.ca.gov, soon to move to www.FIRESCOPE.org

National Association of State Foresters: www.stateforesters.org

National Interagency Coordination Center: www.nicc.gov

National Interagency Fire Center: www.nifc.gov

National Parks Service fire and aviation management: www.nps.gov/fire

National Wildfire Coordinating Group: www.nwcg.gov

U.S. Department of Agriculture Forest Service fire and aviation management: www.fs.fed.us/fire

U.S. Fish and Wildlife Service fire management: fire.r9.fws.gov

Wildland Fire Leadership Council: www.fireplan.gov/wflc_nfp2c.html

Wildland lessons learned center: www.wildfirelessons.net

"A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy" (August 2001) and Implementation Plan (May 2002): www.fireplan.gov/FIRE.REPORT.1.pdf and www.fireplan.gov/10yrIPfinal.cfm

"Federal Wildland Fire Policy" (September, 1996) USDA Forest Service, available at www.fs.fed.us/land/wdfire.htm

"Fire and Ice: The Roles of State and Federal Forestry Agencies in Disaster Management and Response" (1999) available at www.stateforesters.org/reports/Fire&Ice

"The National Fire Plan: Managing the Impact of Wildfires on Communities and the Environment" (Published by the DOI and USDA): www.fireplan.gov

Interagency Incident Business Management Handbook (Published by NWCG: NFES 2160/PMS 902, April 2000), available at: www.nwcg.gov/pms/pubs/iibmhb2.pdf or from NIFC, Great Basin Support Cache Supply Office, 3833 S. Development Ave., Boise, ID 83705

Interagency Standards for Fire and Aviation Operations (2003), available at www.fire.blm.gov/Standards/redbook.htm

Appendix 5b: Selected references on Homeland Security

"National Strategy for Homeland Security" (July 2002) available at
www.whitehouse.gov/homeland

"Securing the Homeland Strengthening the Nation" (the president's FY 2003 budget initiatives
and priorities) available at www.whitehouse.gov/homeland

Homeland Security Presidential Directives:

HSPD-1: Organization and Operation of the Homeland Security Council (October 29,
2001)

HSPD-2: Combating Terrorism Through Immigration Policies (October 29, 2001)

HSPD-3: Homeland Security Advisory System (March 11, 2002)

HSPD-4: National Strategy to Combat Weapons of Mass Destruction (unclassified
version, also NSPD-17, December 11, 2002)

HSPD-5: Management of Domestic Incidents (February 28, 2003)

USA PATRIOT Act (H.R. 3162, signed October 26, 2001)

Homeland Security Act of 2002 (H.R. 5005, signed November 25, 2002)

Key Department of Homeland Security websites:

www.dhs.gov
www.ready.gov
www.disasterhelp.gov

List of Governor-appointed state homeland security contacts, available at:
www.whitehouse.gov/homeland/contactmap.html

National Conference of State Legislatures Terrorism Preparedness and Response website:
www.ncsl.org/terrorism/terrorism.htm

"If Disaster Strikes Today, Are You Ready To Lead? A Governor's Primer on All-Hazards
Emergency management" a report of the National Emergency Management Association,
available at www.nemaweb.org/docs/Gov_Primer.pdf

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