

**CATASTROPHIC INCIDENT
SEARCH AND RESCUE ADDENDUM
to the
National Search and Rescue Supplement
to the
International Aeronautical and Maritime
Search and Rescue Manual
Version 2.0**



November 2009

**Department of Homeland Security
Department of Interior
Department of Commerce
Department of Defense
Department of Transportation
National Aeronautics and Space Administration
Federal Communications Commission
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National Search and Rescue Committee

Letter of Promulgation

Catastrophic Incident Search and Rescue Addendum (Version 2.0) To the National Search and Rescue Supplement

Washington, D.C.
 November 10, 2009

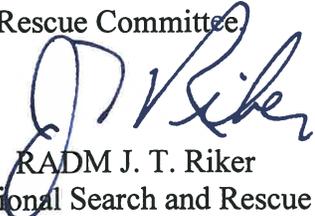
The *National Search and Rescue Plan* is signed by the Departments of Homeland Security, Defense, Interior, Transportation, and Commerce, the National Aeronautics and Space Administration, and the Federal Communications Commission. This plan establishes overarching federal SAR Policy. It adopts the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual and the National SAR Supplement (NSS) to the IAMSAR Manual for use by U.S. SAR Agencies. It supports Federal efforts in response to catastrophic incidents as described in the *National Response Framework (2008)* and *Emergency Support Function #9 Annex, Search and Rescue*.

The National Search and Rescue Committee (NSARC) has revised this *Catastrophic Incident Search and Rescue (CISAR) Addendum* to the *National Search and Rescue Supplement (NSS)* to address the continuing process of improving national preparedness and response to catastrophic incidents in support of States, Tribes, Territories, and local authorities.

CISAR Addendum (Version 2.0) addresses several changes to existing Sections and it adds several new Sections. Because of the new information, the CISAR Addendum has been reformatted into three Parts: 1) CISAR Organization; 2) CISAR Planning and Management; and 3) CISAR Operational Guidance. This new format emphasizes three primary audiences: 1) Federal, State, Tribal, Territorial, and local response organizations; 2) Incident Commanders, SAR Mission Coordinators, and CISAR planners who are involved in coordinating the response to a catastrophic incident; and 3) CISAR responders on the ground, in the air, and on the water trying to save the lives of people in distress.

The United States must always prepare itself to face disasters. The challenge is to merge many different response organizations and cultures into an effective, unified Incident Command that can quickly, safely, and effectively work together to save lives. It is with this vision that the National Search and Rescue Committee has created the CISAR Addendum (Version 2.0).

On behalf of the National Search and Rescue Committee,


 RADM J. T. Riker

Chairman, National Search and Rescue Committee
 Director of Response Policy
 United States Coast Guard

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Foreword

9/11, Hurricane Katrina, and other calamitous events continue to challenge Federal, State, Tribal, Territorial, and local Search and Rescue (SAR) responders in the planning and execution of large-scale SAR operations. NSARC realizes the Federal government's response to large-scale Catastrophic Incident SAR (CISAR; pronounced "See-Eye-SAR") must continue to improve.

As a result of feedback and lessons learned from previous CISAR operations, NSARC has revised and added several new Sections to the original *Catastrophic Incident Search and Rescue (CISAR) Addendum* to the *National Search and Rescue Supplement (NSS)*. In 2010, NSARC will focus its effort on updating the NSS. Meanwhile, it plans to update this CISAR manual as necessary at the conclusion of the 2010 hurricane season.

There are many different Federal, State, Tribal, Territorial, and local SAR response cultures. Each possesses unique capabilities, language, and responsibilities. During a Catastrophic Incident, NSARC member Departments and Agencies are required to conduct multi-agency SAR operations within a unified command. This CISAR Addendum (Version 2.0) has been written to: (1) provide a concise description of the Federal Government's civil SAR response to catastrophic incidents; (2) guide Federal authorities involved in the response; and (3) inform States, Tribes, and Territories on what to expect from Federal SAR responders.

Response to several catastrophic incidents has demonstrated that a unified command is crucial to an effective CISAR response. CISAR Addendum (Version 2.0) sets baseline guidance and principles that can improve the effectiveness of the unified command in the conduct of the CISAR, and provide important guidance for the CISAR.

Correspondence Work Group
National Search and Rescue Committee

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List of Acronyms

ACO	Aircraft Coordinator	EMP	Electromagnetic Pulse
AOB	Air Operations Branch	EMS	Emergency Medical System
ADA	Americans with Disabilities Act	EOC	Emergency Operations Center
AFRCC	Air Force Rescue Coordination Center	EPLO	Emergency Preparedness Liaison Officer
ALARA	As Low As Reasonably Achievable	ESF	Emergency Support Function
AOR	Area of Responsibility	FAA	Federal Aviation Administration
BOB	Boat Operations Branch	FCO	Federal Coordinating Officer
CBRNE	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives	FEMA	Federal Emergency Management Agency
CERFP	CBRNE Enhanced Response Force Package	FRD	FAA Recovery Desk
CISAR	Catastrophic Incident Search and Rescue	GARS	Global Area Reference System
CPG	Comprehensive Preparedness Guide	GPS	Global Positioning System
CSP	Commence Search Point	HAV	Hepatitis A Virus
CST	Civil Support Team	HEPA	High-Efficiency Particulate Air
DART	Disaster Assistance Response Team	HSPD	Homeland Security Presidential Directive
DCO	Defense Coordination Officer	IAMSAR	International Aeronautical and Maritime Search and Rescue
DEN	Domestic Events Network	IAP	Incident Action Plan
DHS	Department of Homeland Security	IC	Incident Commander
DNDO	Domestic Nuclear Detection Office	ICISF	International Critical Incident Stress Foundation
DoD	Department of Defense	ICS	Incident Command System
DOI	Department of Interior	IND	Improvised Nuclear Device
DSCA	Defense Support of Civil Authorities	IPS	Integrated Planning System
EICC	Emergency Incident Coordination Center	IST	Incident Support Team
EMAC	Emergency Management Assistance Compact	INSARAG	International Search and Rescue Advisory Group
		JAC	Joint Analysis Center
		JFO	Joint Field Office
		JIC	Joint Information Center
		JPRC	Joint Personnel Recovery Center
		JTF	Joint Task Force

kHz	Kilohertz	REAC	Radiation Emergency Assistance Center
MHz	Megahertz	SAP	Search Action Plan
MOA	Memorandum of Agreement	SAR	Search and Rescue
MOU	Memorandum of Understanding	SBTF	Small Boat Task Force
MRO	Mass Rescue Operation	SC	Search and Rescue Coordinator
NDART	National Disaster Animal Response Team	SGS	Strategic Guidance Statement
NIFOG	National Interoperability Field Operations Guide	SITREP	Situation Report
NIMS	National Incident Management System	SMC	Search and Rescue Mission Coordinator
NOK	Next-of-kin	SOSC	System Operations Support Center
NAD	North American Datum	SRT	Special Response Team
NGO	Nongovernmental Organization	SRU	Search and Rescue Unit
NPS	National Park Service	TFR	Temporary Flight Restriction
NRCC	National Response Coordinator Center	UCG	Unified Coordinating Group
NRF	National Response Framework	US&R	Urban Search and Rescue
NSP	National Search and Rescue Plan	USC	United States Code
NSS	National Search and Rescue Supplement	USCG	United States Coast Guard
OSC	On Scene Coordinator	USNG	U.S. National Grid
PIO	Public Information Officer	USNORTHCOM	U.S. Northern Command
PPE	Personal Protective Equipment	USPACOM	U.S. Pacific Command
PR	Personnel Recovery	VHF	Very High Frequency
RCC	Rescue Coordination Center	VOAD	Voluntary Organizations Active in Disasters
RDD	Radiological Dispersion Device	WGS	World Geodetic System
		WMD	Weapons of Mass Destruction

Introduction

Introduction

Purpose

Limited Scope

Potential Large Scale

Effective CISAR Communication

Effective CISAR Planning

Federal Preparedness and Response

Introduction

In recent years, our nation has faced a remarkable series of disasters and emergencies. As a result, our national response structures are evolving to meet these threats. *The National Response Framework (NRF)* is the next step in this evolution. It defines how we respond as a nation to these challenges.

Based on best practices and lessons learned, the NRF has been developed to provide guiding principles that enable all Federal response partners to prepare for and provide a unified national response to disasters and emergencies – from the smallest incident to the largest catastrophe.

The NRF's key principles include:

- Engaged partnership;
- Tiered response;
- Scalable, flexible, and adaptable operational capabilities; and
- Unity of effort through unified command,

In support of these principles, the National Search and Rescue Committee (NSARC)

has created the *Catastrophic Incident Search and Rescue (CISAR) Addendum (Version 2.0)* to the *National Search and Rescue Supplement (NSS)*. Its purpose is to address the continuing process of national preparedness and response to catastrophic incidents in support of State, Tribal, Territorial, and local authorities.

Purpose

CISAR Addendum (Version 2.0) is intended to provide a concise description of the:

- Federal Government's civil search and rescue (SAR) response to catastrophic incidents;
- Guide Federal authorities involved in the response; and
- Inform States, Tribes, and Territories on what to expect when Federal SAR responders are requested to assist.

Limited Scope

The CISAR Addendum (Version 2.0) provides guidance for SAR operations during Catastrophic Incidents. CISAR consists of civil SAR operations carried out as all or part of the response to an

emergency or disaster declared by the President, under provisions of the NRF and Emergency Support Function (ESF) #9.

This Addendum does not supersede other Federal, State, Tribal, or Territorial SAR plans.

Potential Large Scale

Depending on the nature of a catastrophic incident (i.e., earthquake, hurricane, terrorist attack, etc.), CISAR operations may be required. If CISAR operations are conducted and ESF #9 is implemented, operations may be either a minor or major aspect of the overall incident response. Even if CISAR operations are conducted, it may very well be that State, Tribal, Territorial, and local authorities can conduct CISAR operations using their own resources. This Addendum recognizes the need for a Federal, scalable, coordinated SAR effort that can be tailored to the incident.

An effective response to a major catastrophic incident typically requires immediate, well-planned, and coordinated large-scale actions and use of resources from multiple organizations.

Effective CISAR Communication

Effective communication is required to meet the anticipated needs of CISAR responders,

decision makers, the media, and the public. Coordination of information through disparate communications systems will likely be long-term and logistically demanding. Mobilization, deployment and employment of personnel, equipment, and communications systems will require interagency coordination to ensure timely and accurate information is available to all stakeholders.

Effective CISAR Planning

Successful large-scale CISAR operations depend on flexible contingency plans. Intense integrated planning and operational efforts must also be conducted throughout rescue efforts (See Section 2.-2: CISAR Planning Considerations).

Federal Preparedness and Response

Moral and legal obligations, as well as public and political expectations, drive the need to be prepared to carry out CISAR operations safely and effectively.

Normally, Federal resources are used to respond to Catastrophic Incidents only when State, Tribal, Territorial, and local response capabilities are overwhelmed or when an accelerated, proactive national response to a catastrophic incident is necessary.

Part 1: Organization

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Section 1-1: CISAR Primary Reference and Guidance Documents

Table 1-1-1 below provides a summary of primary references and guidance documents for CISAR operations.

Table 1-1-1: Key CISAR References	
Robert T Stafford Disaster Relief and Emergency Assistance Act (“Stafford Act”)	The Stafford Act (PL 100-707, 23 Nov 88) is the statutory authority for most Federal disaster response activities, especially as they pertain to programs of the Federal Emergency Management Agency (FEMA).
Flood Control and Coastal Emergencies Act, 33 U.S.C. § 701n (2007) (commonly referred to as Pub. L. 84-99)	Authorizes an emergency fund for preparation for emergency response to, among other things, natural disasters, flood fighting and rescue operations, repair or restoration of flood control and hurricane protection structures, temporary restoration of essential public facilities and services, and provision of emergency supplies of water.
Executive Order 12148, 44 Fed. Reg. 43239 (1979), as amended, by Executive Order 13286, 68 Fed. Reg. 10619 (2003)	Designates DHS as the primary agency for coordination of Federal disaster relief, emergency assistance, and emergency preparedness. The order also delegates the President’s relief and assistance functions under the Stafford Act to the Secretary of Homeland Security, with the exception of the declaration of a major disaster or emergency.
Homeland Security Presidential Directive (HSPD) 5: Management of Domestic Incidents, February 28, 2003	HSPD-5 serves to enhance the ability of the United States to manage domestic incidents by establishing a single, comprehensive national incident management system. This management system is designed to cover the prevention, preparation, response, and recovery from terrorist attacks, major disasters, and other emergencies. The directive gives further detail on which government officials oversee and have authority for various parts of the national incident management system.
National Response Framework (NRF) (www.fema.gov/emergency)	The NRF presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies. It establishes a comprehensive, national, all-hazards approach to domestic incident response.
Emergency Support Function (ESF) #9 - Search and Rescue Annex	ESF #9 details the Federal Government’s SAR responsibilities, identifies FEMA as the ESF #9 Coordinator, and explains the duties of the Federal Agency(s) assigned as Lead Primary Agency for a specific incident requiring Federal SAR assistance (See Section 1-3: Emergency Support Function #9).
National Search and Rescue Plan (NSP)	The NSP is an interagency agreement that constitutes the primary authority and policy guidance for involvement of Federal Agencies (including the military), in coordinating, providing, or supporting civil SAR services so that the United States can meet both domestic needs and international commitments.
National Search and Rescue Supplement (NSS)	The NSS is a Federal manual on civil SAR that, together with its various addenda, provides extensive guidance for implementation of the NSP.
International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual)	The IAMSAR Manual is a three-volume Manual used worldwide for aeronautical and maritime civil SAR. In the United States, the IAMSAR Manual is supplemented by the NSS and this Addendum.

Section 1-2: Catastrophic Incident SAR

Catastrophic Incident Search and Rescue (CISAR)

Homeland Security Presidential Directive 5 (HSPD-5)

State, Tribal, or Territorial Authorities Request for Assistance

Catastrophic Incident Search and Rescue (CISAR)

Civil SAR is composed of search operations, rescue operations, and associated civilian services provided to assist persons and property in potential or actual distress in a non-hostile environment.

CISAR consists of civil SAR operations carried out as all or part of the response to an emergency or disaster declared by the President under provisions of the NRF and ESF #9.

Catastrophic Incident

"A catastrophic incident is any natural or manmade incident, including terrorism, which results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions."

National Response Framework, page 42

The nature of CISAR could range from normal SAR operations to the conduct of mass rescue operations. Two criteria must be met for an incident to be identified as CISAR. First, the response must be associated with a Presidential Declaration. Second, ESF #9 must be implemented. Clear delineation between normal SAR, mass rescue operations, and CISAR may not be apparent. However, it is important to

understand that flexible response options are available for these progressive or potentially overwhelming events. This Addendum attempts to provide standardized and flexible options for any type of CISAR operation.

Provisions of the NSP, NSS, and relevant addenda always apply to civil SAR regardless of whether the operations are CISAR. If the operations are CISAR, then provisions of the NRF and its relevant supporting documents also apply.

Homeland Security Presidential Directive 5 (HSPD-5)

HSPD-5 explains the Federal Government's policy on responding to disasters. HSPD-5 states the following:

To prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies, the United States Government shall establish a single, comprehensive approach to domestic incident management. The objective of the United States Government is to ensure that all levels of government across the Nation have the capability to work efficiently and effectively together, using a national approach to domestic incident management. In these efforts, with regard to domestic incidents, the United States Government treats crisis management and consequence management as a single, integrated

function, rather than as two separate functions.

The Secretary of Homeland Security is the principal Federal official for domestic incident management. Pursuant to the Homeland Security Act of 2002, the Secretary is responsible for coordinating Federal operations within the United States to prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies. The Secretary shall coordinate the Federal Government's resources utilized in response to or recovery from terrorist attacks, major disasters, or other emergencies if and when any one of the following four conditions applies:

(1) A Federal Department or Agency acting under its own authority has requested the assistance of the Secretary;

(2) The resources of State and local authorities are overwhelmed and Federal assistance has been requested by the appropriate State and local authorities;

(3) More than one Federal department or agency has become substantially involved in responding to the incident; or

(4) The Secretary has been directed to assume responsibility for managing the domestic incident by the President.

State, Tribal, or Territorial Authorities Request for Assistance

Figure 1-2-1 below details a typical State request for Federal assistance.

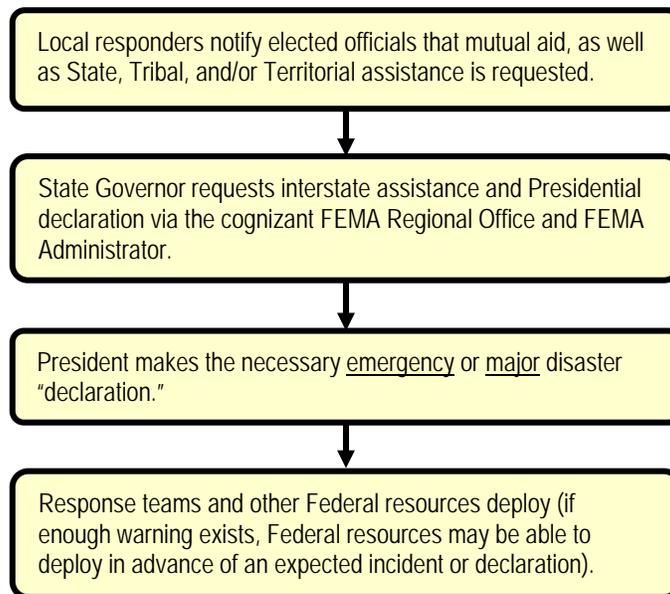


Figure 1-2-1: Emergency or Major Disaster Declaration

Section 1-3: Emergency Support Function #9 - Search and Rescue (SAR)

Emergency Support Functions

ESF #9

FEMA: ESF #9 Coordinator

Lead Primary Agency

Emergency Support Functions

Federal, State, Tribal, Territorial, and local governments, as well as other organizations, organize resources and capabilities under 15 Emergency Support Functions (ESFs). ESFs align categories of resources and provide strategic objectives for their use.

ESFs may be selectively activated for both Stafford Act and non-Stafford Act incidents where Federal authorities request Department of Homeland Security (DHS) assistance or under other circumstances as defined in HSPD-5. Not every incident results in the activation of all ESFs.

Activation depends on the nature and magnitude of the event, the suddenness of onset, and for ESF #9, the existence of SAR resources in the affected area.

The ESF #9 SAR response is scalable to meet the specific needs of each incident,

based upon the nature and magnitude of the event, the suddenness of onset, and the capability of local SAR resources.

ESF #9

ESF #9 rapidly deploys Federal SAR resources to provide lifesaving assistance to State, Tribal, Territorial, and local SAR Coordinator(s), SAR Mission Coordinator(s), and other authorities when a request for assistance is made or anticipated from an authority recognized by the NRF for incidents or potential incidents requiring an integrated SAR response.

Table 1-3-1 on the next page lists the ESF #9 Primary Agencies, the type of SAR they will coordinate, and an operational overview of the type of SAR. These agencies are addressed because they are Primary and others may be added if it is determined they should be included.

Table 1-3-1: ESF #9 Primary Agencies

Type of SAR	Primary Agency	Operational Overview
Structure Collapse (Urban) SAR (US&R)	DHS/Federal Emergency Management Agency (FEMA)	Includes operations for natural and man-made disasters and Catastrophic Incidents as well as other structural collapse operations that primarily require DHS/FEMA US&R task force operations. The National US&R Response System integrates DHS/FEMA US&R task forces, Incident Support Teams (ISTs), and technical specialists. The Federal structural collapse SAR response integrates DHS/FEMA task forces in support of integrated SAR operations conducted in accordance with the NSP.
Maritime/Coastal/Waterborne SAR	DHS/U.S. Coast Guard	Includes operations for natural and man-made disasters that primarily require DHS/USCG air, ship, boat, and response team operations. The Federal maritime/coastal/waterborne SAR response integrates DHS/USCG resources in support of integrated SAR operations conducted in accordance with the NSP.
Land SAR	DOI/National Park Service and Department of Defense	Includes operations that require aviation and ground forces to meet mission objectives other than maritime/coastal/waterborne and structural collapse SAR operations as described above. Land SAR Primary Agencies will integrate their efforts to provide an array of diverse capabilities under ESF #9. <i>(Note: DoD's role as primary agency is based on SAR Coordinator responsibilities stipulated in the NSP and is generally limited to a coordination function. DoD designation as ESF #9 primary agency is not clearly defined in current statutes, authorities, or DoD policies. Under the NRF, DoD will assist civil authorities by conducting SAR missions on a reimbursable basis pursuant to the Stafford Act or Economy Act, as appropriate.)</i>

As provided in ESF #9, immediate CISAR operations are conducted in accordance with the IAMSAR Manual, NSP, and the NSS, which define SAR responsibilities and provide guidance to the involved Federal agencies. For CISAR, these agencies assist or augment State, Tribal, Territorial, and local capabilities.

FEMA: ESF #9 Coordinator

FEMA is the ESF #9 Coordinator and will activate ESF #9 when an incident is anticipated or occurs that may result in a

request for an integrated SAR response to an impacted area.

FEMA will designate the Lead Primary Agency for an ESF #9 SAR response. Designation is dependent upon incident circumstances and the type of response required.

FEMA will coordinate with other ESFs to ensure the most expedient and efficient resources are mobilized.

Lead Primary Agency

An ESF Primary Agency is a Federal Agency with significant authorities, roles, resources, or capabilities for a particular function within an ESF. A Primary Agency serves as an executive agent under the Federal Coordinating Officer (or Federal Resource Coordinator for non-Stafford Act incidents) to accomplish the ESF mission.

The Federal Agency designated Lead Primary Agency will coordinate integration of Federal SAR resources in support of the State, Tribe, or Territory that is requesting Federal SAR support. Coordination efforts will also include Support Agency equities.

The other ESF #9 Agencies will provide support to the designated Lead Primary Agency as required by the Unified Command.

In accordance with ESF #9, for incidents in which a Federal Agency is designated the Lead Primary Agency, the following duties shall be performed:

- Coordinate resolution of conflicting operational demands for SAR response resources;
- Coordinate the provisioning of additional support assets;
- Coordinate with Federal, State, Tribal, Territorial, and local designated SAR authorities to integrate Federal SAR resources;
- Coordinate planning and operations between Primary and Support Agencies;
- As required, provide representation at FEMA's National Response Coordination Center (NRCC), Joint Field Office (JFO), and State, Tribal, Territorial, and local Emergency Operations Centers (EOC); and
- Provide incident reports, assessments, and situation reports as required.

Section 1-4: Lead Federal Responsibilities

General Provisions

CISAR Operations vs. Routine SAR

NSP: SAR Coordinator (SC)

Summary of Federal Responsibilities

General Provisions

The NRF provides an overview of key federal roles and responsibilities in disaster response operations. Additionally, the NSP provides an overview key Federal roles and responsibilities for routine civil SAR operations.

When the overall coordination of Federal response activities is required, it is implemented through DHS and HSPD-5. Other Federal Departments and Agencies carry out their response authorities and responsibilities within the National Incident Management System's (NIMS) Incident Command System (ICS).

It is important to note that nothing in the NRF alters or impedes the ability of Federal, State, Tribal, Territorial, or local governments to carry out their specific statutory authorities and responsibilities.

CISAR Operations vs. Routine SAR

ESF #9 always applies for CISAR operations. Within ESF #9, the NSP and its associated documents are identified as the key policy and guidance documents for implementing ESF #9 CISAR operations.

SAR authorities under both ESF #9 and the NSP provide and arrange for SAR services. SAR services involve application and management of CISAR capabilities through the use of public and private resources. These resources include: cooperating aircraft, vessels, other craft, response teams, and installations.

Table 1-4-1 on the next page highlights the differences between CISAR operations and routine SAR.

Table 1-4-1: CISAR Operations vs. Routine SAR

	Catastrophic Incident SAR	Routine SAR
What type of SAR is conducted?	CISAR consists of civil SAR operations carried out as all or part of the response to an emergency or disaster declared by the President under provisions of the NRF and ESF #9.	Any SAR operations that do not meet the threshold of a CISAR operation.
What guidance applies?	The IAMSAR Manual, NRF, ESF #9, NSP, NSM, this Addendum, and Agency specific policy and doctrine.	IAMSAR Manual, NSP, NSM, and Agency specific policy and doctrine.
Which Federal Agency is the lead?	As per ESF #9, the Federal Lead Primary Agency for a particular type of CISAR incident (DHS/FEMA: Urban; DHS/U.S. Coast Guard: Maritime/Coastal/Waterborne; DOI/NPS or DoD: Land SAR) will be the lead. This only identifies the Federal Lead Primary Agency. The State, Tribe, or Territory requesting assistance should be managing the unified CISAR response. <i>(Note: DoD's Lead Primary Agency responsibilities will be in accordance with DoD stipulations identified in Section 1-3, Table 1-3-1.)</i>	The SAR Coordinator (SC) for a particular SAR Region is the lead agency. As per the NSP, the SC is the Federal person or Agency with overall responsibility for establishing and providing SAR services for a SAR region in which the U.S. has primary responsibility.
What is the Lead Federal Agency's role?	Federal executive agent under the Federal Coordinating Officer (a FEMA representative) to accomplish the ESF #9 mission.	As per the NSP, the SC is responsible for providing or arranging for SAR services within United States SAR Regions.
Who is responsible for conducting the SAR mission?	Federal CISAR responders are under the tactical control of the Incident Command and SMC.	The overall responsibility for SAR within a particular geographic region is the SAR Coordinator (SC). The SMC or agency lead will coordinate each specific SAR case based on Agency policies and procedures.
What Command and Control system will be used?	NIMS/ICS	As per the NSP, various command and control systems are used based on agency specific policies and procedures

NSP: SAR Coordinator (SC)

According to the NSP, when conducting normal SAR operations (not CISAR), an SC is one or more persons or agencies with overall responsibility for establishing and providing SAR services, and for ensuring that planning for those services is properly coordinated. Similar to the ESF #9 Primary Agencies, the Federal SCs identified in the NSP are associated with certain types of SAR, but also with responsibilities for certain geographic areas known as SAR Regions (Note: Details about SAR Regions

and associated responsibilities are provided in the NSS.).

Federal SC responsibilities apply to all relevant types of SAR (except urban SAR) covered by the NSP within each SAR Region. Additionally, certain SAR responsibilities for SAR services have been assumed by SCs according to agreements signed with States.

Summary of Federal Responsibilities

Refer to ESF #9 for information about Primary and Supporting Agencies, the types of CISAR operations, and the responsible Lead Primary Agency for each.

Refer to the NSP concerning Federal SC responsibilities.

It is important to understand that the NSP continues to apply even when ESF #9 is implemented. As such, both the Federal SC and ESF #9 Primary Agencies will coordinate providing SAR resources for a CISAR incident. However, the designated ESF #9 Primary Agency has lead

responsibility in coordinating Federal SAR resources in support of the requesting State, Tribe, or Territory for the particular incident.

Table 1-4-2 below explains how ESF #9 Primary Agency and Federal SC responsibilities compare.

Table 1-4-2: Federal Responsibilities: Routine SAR and CISAR Operations (ESF #9)

CISAR Operations	Routine SAR (non-CISAR)
<p>ESF #9: Primary Agencies</p> <p>Primary Agency: Federal Agency with significant authorities, roles, resources, or capabilities for a particular function within an ESF. Under ESF #9, the Primary Agency is assigned based on the nature of the SAR operations to be conducted.</p> <p>-----</p> <p>The Primary Agencies under ESF #9 and their areas of responsibility are as follows:</p> <p>FEMA: Urban SAR</p> <p>Coast Guard: Maritime/Coastal/Waterborne SAR</p> <p>National Park Service/DoD: Land SAR</p> <p><i>(Note: The NSP remains applicable, even during CISAR operations. Federal SAR Coordinators will continue to manage SAR operations in their respective area of responsibility.)</i></p>	<p>NSP: Federal SAR Coordinators</p> <p>SAR Coordinator: One or more persons or agencies with overall responsibility for establishing and providing SAR services, and for ensuring that planning for those services is properly coordinated.</p> <p>-----</p> <p>The United States Federal SAR Coordinators and their area of responsibility are as follows:</p> <p>U.S. Pacific Command: Alaska</p> <p>Coast Guard: Maritime SAR Regions and Hawaii</p> <p>National Park: Service: National Parks</p> <p>U.S. Northern Command: Continental U.S. other than Alaska</p>

ESF #9 Primary Agencies working with the Federal SC

CISAR Operations are a team effort.

Considering the differences between ESF #9 Primary Agencies and the Federal SC responsibilities described in the NSP, ESF #9 Primary Agencies should work closely with the respective Federal SC in the affected area.

Section 1-5: Federal Emergency Management Agency (FEMA)

FEMA's Role

FEMA, ESF #9, and Urban Search and Rescue (US&R) Task Force

Responsibilities

National US&R Response System

FEMA Regional Offices

FEMA's Role

The Federal Emergency Management Agency (FEMA) is an Agency within DHS. Under HSPD-5, the Secretary of DHS is responsible for:

- Administering NIMS for use by Federal, State, Tribal, Territorial, and local governments; and
- Developing/administering the NRF for all-hazards emergency and disaster response.

All Federal Departments and Agencies must adopt and implement NIMS and the NRF where applicable. FEMA helps DHS meet these HSPD-5 responsibilities.

Federal assistance for incidents that do not require DHS coordination may be led by other Federal Departments and Agencies consistent with their authorities. DHS may monitor such incidents and may activate specific NRF mechanisms to provide support to Departments and Agencies without assuming overall leadership for the Federal response to the incident.

FEMA, ESF #9, and Urban Search and Rescue (US&R) Task Force Responsibilities

FEMA is the ESF #9 Coordinator. In addition, FEMA is the ESF #9 Lead Primary Agency for Structural Collapse SAR, which includes operations for natural and man-made disasters and catastrophic incidents as well as other structural collapse operations that primarily require FEMA US&R task force operations.

FEMA develops national US&R policy, provides planning guidance and coordination assistance, standardizes task force procedures, evaluates task force operational readiness, funds special equipment and training within available appropriations, and reimburses, as appropriate, task force costs incurred as a result of ESF #9 deployment.

National US&R Response System

FEMA's National US&R Response System integrates FEMA US&R task forces, Incident Support Teams (ISTs), and technical specialists. The Federal Structural Collapse SAR response integrates FEMA task forces in support of unified SAR operations conducted in accordance with the NSP.

The National US&R Response System is prepared to deploy SAR responders and initiate operations immediately in support of ESF #9. US&R task forces are staffed primarily by emergency services personnel who are trained and have experience in collapsed structure SAR operations and possess specialized expertise and equipment.

Upon activation under the NRF, FEMA US&R task forces are considered Federal assets under the Robert T. Stafford Disaster Relief and Emergency Assistance Act and other applicable authorities.

ISTs provide coordination and logistical support to US&R task forces during emergency operations. They also conduct needs assessments and provide technical advice and assistance to State, Tribal, Territorial, and local government emergency managers.

Currently, there are 28 self-supporting US&R task forces that can assist State, Tribal, Territorial, and local governments in SAR operations involving collapsed structures.

FEMA Regional Offices

FEMA has ten regional offices that:

- Support development of NRF-related response plans;
- Assist States, Tribes, Territories, and local communities improve readiness; and
- Mobilize FEMA assets and evaluation teams.

FEMA Regional Offices

Region I Serving CT, MA, ME, NH, RI, VT

Region II Serving NJ, NY, Puerto Rico and the US Virgin Islands

Region III Serving DC, DE, MD, PA, VA, WV

Region IV Serving AL, FL, GA, KY, MS, NC, SC, TN

Region V Serving IL, IN, MI, MN, OH, WI

Region VI Serving AR, LA, NM, OK, TX

Region VII Serving IA, KS, MO, NE

Region VIII Serving CO, MT, ND, SD, UT, WY

Region IX Serving AZ, CA, GUAM, HI, NV, CNMI, RMI, FSM, American Samoa

Region X Serving AK, ID, OR, WA

The National Response Coordination Center (NRCC) located at FEMA Headquarters in Washington, D.C. can be contacted at 1-202-646-2828.

Section 1-6: Department of Defense (DoD)

DoD Support for Civil SAR

DoD Policy

DoD Responsibilities

Resources

Defense Support of Civil Authorities (DSCA)

Legal Restrictions

Key DoD DSCA Elements

National Guard

DoD Support for Civil SAR

The Department of Defense (DoD) possesses a great deal of resources, many of which are immediately available to support civil SAR operations. Whether responding to notice or non-notice events, emergency managers at all levels should consider using these resources as early in the planning process as possible.

DoD components are authorized to respond to save lives, prevent human suffering, or mitigate property damage under imminently serious conditions, as well as to provide support under their separate established authorities.

Under provisions of the NSP and existing Memoranda of Understanding (MOUs)/Memoranda of Agreement (MOAs), DoD components maintain active, reserve, and other DoD resources that can be immediately used for SAR without using the Federal Request-for-Assistance process.

SAR operations resulting from actual or potential Mass Rescue Operations (MROs) under a catastrophic event will likely result

in a Presidential Declaration that will enable a number of national mechanisms to be activated to assist State, Tribal, Territorial, and local governments. This may involve the implementation of the NRF, FEMA coordination of all SAR operations under ESF #9 of the NRF, and a coordinated effort between the Defense Coordinating Officer (DCO) and the Federal Coordinating Officer (FCO) for subsequent Defense Support of Civil Authorities (DSCA).

In accordance with the NSP, arrangements between military and civil agencies should provide for the fullest practicable cooperation, consistent with statutory responsibilities, authorities, and assigned civil SAR functions.

DoD Policy

Per DoD Directive 3003.01, DoD will support domestic civil authorities by providing civil SAR services to the fullest extent practicable on a non-interference basis with primary military duties; such services are provided according to applicable national directives, plans,

guidelines, and agreements and under the authority of and consistent with the NSP. NSP support may be provided on a reimbursable basis according to the Economy Act or the Stafford Act. In accordance with the NRF, and to ensure a coordinated DoD response, all requests for DoD support of CISAR operations should be submitted to the Secretary of Defense from the FCO via the DCO at the Joint Field Office.

As discussed in the NSP, DoD may also, if requested, support civil SAR operations anywhere in the world, consistent with its expertise, capabilities, and legal authority.

DoD Responsibilities

SC duties as detailed in the NSP are separate and distinct from ESF #9 Lead Agency assignments. SC duties are assigned to the U.S. Northern Command for the continental United States other than Alaska, and to the U.S. Pacific Command for Alaska.

As its name indicates, DSCA functions are provided in support of non-DoD authorities. SC duties assigned to DoD (and approved by the Deputy Secretary of Defense) by the NSP, which includes establishment of RCCs, are not generally considered to be support functions, but rather a primary function assigned to DoD.

The NSP also assigns substantial support roles for civil SAR to the military. These roles are largely endorsed for CISAR by ESF #9. For CISAR operations other than US&R, the NRF generally builds on rather than supplants provisions of the NSP.

DoD and DOI/National Park Service:

ESF #9 Primary Agencies - Land SAR

Operational Overview: Land SAR includes operations that require aviation and ground forces to meet mission objectives other than maritime/coastal/waterborne (Primary Agency: Coast Guard) and structural collapse SAR operations (Primary Agency: FEMA).

DoD, through USNORTHCOM and USPACOM, will coordinate facilities, resources, and special capabilities that conduct and support air, land, and maritime SAR operations according to applicable directives, plans, guidelines and agreements. Per the NSP, the U.S. Air Force and USPACOM provide resources for the organization and coordination of civil SAR services and operations with their assigned SAR regions and when requested, assist Federal, State, Tribe, Territory, and local authorities.

See Note below.

(Note: DoD's role as an ESF #9 Lead Primary Agency is based on SAR Coordinator responsibilities stipulated in the NSP and is generally limited to a coordination function. DoD designation as an ESF #9 Lead Primary Agency is not clearly defined in current statutes, authorities, or DoD policies. Under the NRF, DoD will assist civil authorities by conducting SAR missions on a reimbursable basis pursuant to the Stafford Act or Economy Act, as appropriate. If DoD SAR capabilities deploy at the direction of the Air Force Rescue Coordination Center (AFRCC) in support of the SDP, and subsequently if the Stafford Act is invoked, those capabilities will be administered by the NRF and ESF #9. As soon as practical, a FEMA or other Department/Agency Mission Assignment will be submitted and approved by DoD for those capabilities continued support.)

Resources

Civil authorities may use existing MOUs/MOAs to facilitate immediate use of DoD resources for civil SAR.

AFRCC

The US Air Force Rescue Coordination Center (AFRCC) maintains MOUs/MOAs with each State and has extensive resource files of available DoD and civilian SAR assets. At the State's request, the AFRCC coordinates arrangements for their use.

Civil authorities requiring an immediate response from DoD for civil SAR within the 48 contiguous states should contact the AFRCC at 1-800-851-3051 as soon as a need is anticipated or identified.

This authority is applicable only to DoD support provided within the 50 United States, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any possession of the United States or any political subdivision thereof.

A Federal military commander or civilian equivalent may immediately respond to a request for assistance from civil authorities to save lives, prevent human suffering, and mitigate property damage under imminently serious conditions without prior Secretary of Defense approval. As soon as possible, commanders must request approval from the Secretary of Defense to provide additional support.

(Note: Civil authorities who verbally request military assistance in an emergency should follow up with a written request.)

Not later than 72 hours after resources have been employed under Immediate Response, the Heads of DoD Components, commanders, and/or responsible DoD civilians, shall reassess whether conditions warrant continuation of the response under this authority.

A CISAR event may involve large numbers of persons needing assistance, and response priority must be given to saving human lives. Lifesaving efforts must be immediate (within 48 hours or less, depending on the circumstances), which often requires deploying resources before they are requested. The AFRCC and/or Joint Personnel Recovery Center (JPRC) can provide critical planning and deployment of aeronautical SAR assets to support State, Tribe, or Territory CISAR plans.

Defense Support of Civil Authorities (DSCA)

DoD's primary mission is national defense; because of this critical role, resources are normally committed to NRF-related operations only after approval by the Secretary of Defense or at the direction of the President. DoD support to civil authorities is referred to as DSCA. The relevant DoD Directives regarding DSCA policy are DODD 3025.1, Military Support to Civil Authorities, and 3025.15, Military Assistance to Civil Authorities. The DoD Directive for DoD Support to Civil SAR is DODD 3003.01.

DSCA may involve Federal military forces, DoD civilians, contractor personnel, and DoD agencies and components.

In support of ESF #9, after a Stafford Act declaration, requests for DSCA are submitted by a DCO to DoD after Defense assistance is requested by the Federal Coordinating Officer.

Department of Defense

Nothing in this directive impairs or otherwise affects the authority of the Secretary of Defense over the Department of Defense, including the chain of command for military forces from the President as Commander in Chief, to the Secretary of Defense, to the commander of military forces, or military command and control procedures. The Secretary of Defense shall provide military support to civil authorities for domestic incidents as directed by the President or when consistent with military readiness and appropriate under the circumstances and the law. The Secretary of Defense shall retain command of military forces providing civil support. The Secretary of Defense and the Secretary [of Homeland Security] shall establish appropriate relationships and mechanisms for cooperation and coordination between their two departments.

Homeland Security Presidential Directive 5 (HSPD-5), Paragraph 9

Legal Restrictions

Posse Comitatus Act. The *Posse Comitatus Act* is a United States Federal law (18 U.S.C. § 1385) that prohibits most members of the Federal armed forces (Army, Air Force, Navy, Marine Corps, and State National Guard forces when such are called into Federal service) from exercising law enforcement, police or peace officer powers that maintain "law and order" within the United States, except where expressly authorized by the Constitution or Congress (The fifth member of the armed forces, the Coast Guard, is exempt from the *Posse Comitatus Act* by Title 14 of the U.S. Code.).

This is relevant because some CISAR situations may involve the presence of military personnel supporting SAR on scene when law enforcement operations may need to be carried out concurrently in the same location.

DoD Support Structure for Catastrophic Incident SAR

U.S. Northern Command (USNORTHCOM). USNORTHCOM has command and control of assigned personnel and resources providing DSCA in their area of responsibility (AOR). Additional forces can be made available, under the command and control of USNORTHCOM as authorized by Secretary of Defense order (includes resources authorized under the DSCA Execution Order).

U.S. Pacific Command (USPACOM). USPACOM has command and control of assigned personnel and resources providing DSCA in their AOR. Additional forces can be made available, under the command and control of USPACOM as authorized by Secretary of Defense order (includes resources authorized under the DSCA Execution Order).

USNORTHCOM and USPACOM have established Joint Personnel Recover Centers (JPRC) to coordinate DoD SAR operations in their respective AORs

Defense Coordinating Officer (DCO). USNORTHCOM and USPACOM use DCOs to coordinate with FEMA in their respective AORs. USNORTHCOM has 10 permanently assigned DCOs; one assigned to each of the 10 FEMA Regions within the Continental U.S. The DCO serves as DoD's single point of contact within the Unified Coordination Group (UCG) for requesting DoD assistance. With few exceptions, DSCA requests originating at the UCG are coordinated with and processed through the DCO.

Joint Task Force (JTF). Based on the complexity and type of incident, and the anticipated level of DoD resource involvement, USNORTHCOM or USPACOM may designate a JTF to Federal command military activities in support of

DSCA incident objectives. DoD civil SAR forces will normally be coordinated by a SAR or Joint Personnel Recovery Liaison within the JTF; these officers will liaise DoD support with the respective SAR Branches of the Federal Joint Field Office (JFO) and/or the State Emergency Operations Centers (if established).

Air Force Rescue Coordination Center (AFRCC). For incidents in which DoD is the designated ESF #9 Lead Primary Agency, the AFRCC will continue to handle day-to-day SAR and transfer CISAR responsibilities over to the USNORTHCOM JPRC.

Joint Personnel Recovery Center (JPRC). For incidents in which DoD is the ESF #9 Lead Primary Agency, the JPRC is the command and control node for DoD Title 10 SAR assets.

For CISAR operations, the JPRC:

- Commands and controls DoD SAR forces for CISAR operations based on the State, Tribe, or Territory SAR Plans and requests;

- Handles CISAR reports, assessments, and situation reports;
- Helps de-conflict demands for DoD SAR air assets; and
- Facilitates coordination among DoD and other Federal, State, and local response activities.

Emergency Preparedness Liaison Officer (EPLO) Program. EPLOs are senior active Reserve officers in the rank of Colonel from each military service and the U.S. Coast Guard who provide information on appropriate military assistance to other Federal Agencies and State governments, and help coordinate these capabilities with the DCO.

National Guard

National Guard forces employed under State active duty or Title 32 status are under the command and control of the Governor of their respective State. While under the command of the President and the Secretary of Defense, Federal military forces coordinate closely with National Guard forces to promote unity of effort.

Simplified DoD Support Structure for Catastrophic Incident SAR

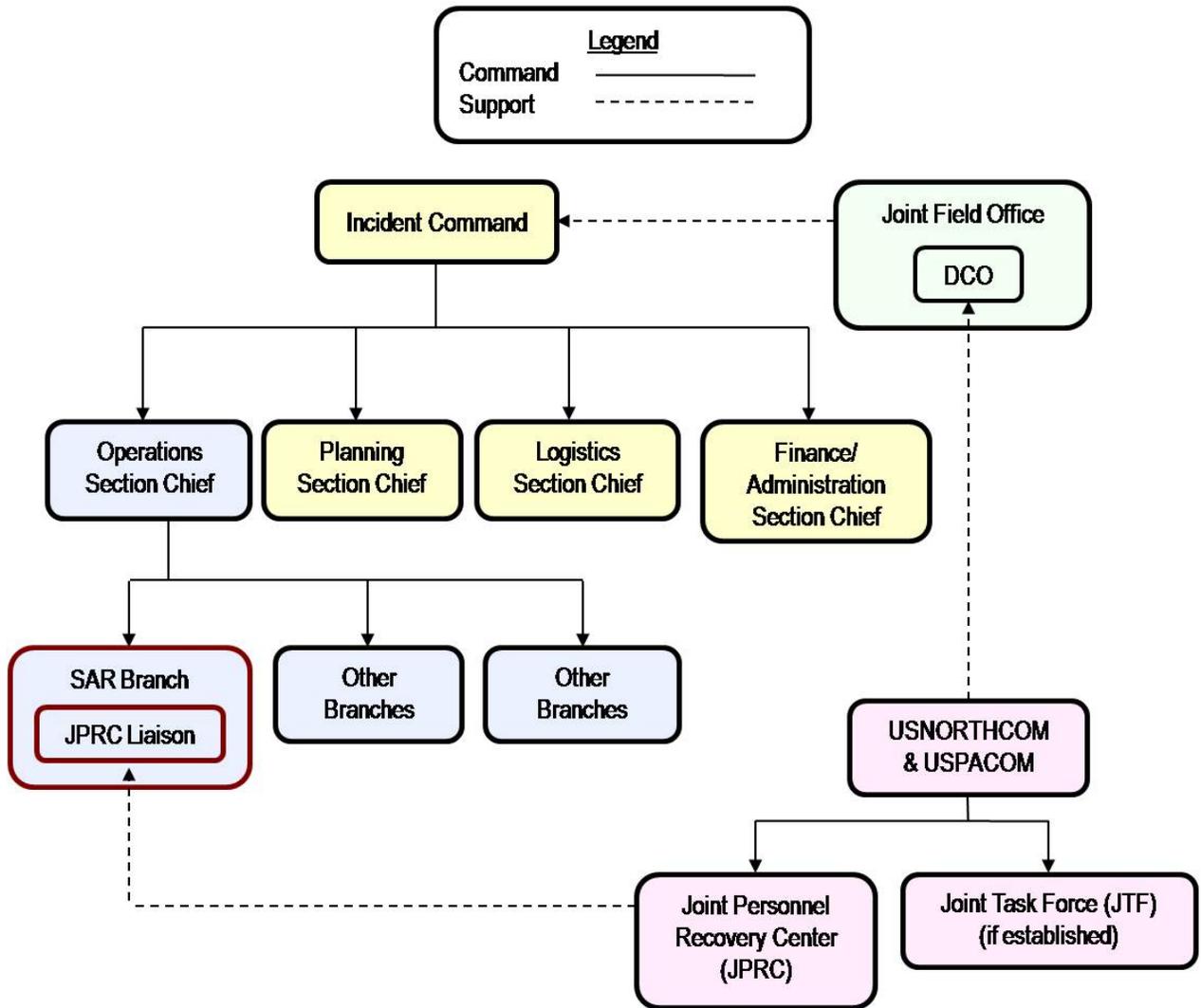


Figure 1-6-1

Section 1-7: United States Coast Guard (USCG)

USCG Authority

USCG Routine SAR Support to State, Tribal, Territorial, and Local Governments

ESF #9 & CISAR

CIS Coordination

USCG Capabilities in Support of a CISAR Response

DARTs

Air Coordination Officers

References

USCG Authority

The USCG's statutory authority to conduct SAR missions is found in 14 USC 2, 88, and 141.

The USCG has many resources that may be immediately available to support civil SAR operations. Whether responding to notice or non-notice events, emergency managers should consider using these resources as early in the planning process as possible.

Routine USCG SAR Support to State, Tribal, Territorial, and Local Governments

For routine/normal SAR support, assistance does not require coordination by DHS through ESF #9 Mission Assignments (MA) and can be provided without a Presidential emergency or major disaster declaration.

In these instances the USCG provides assistance to the States, Tribes, Territories, and local jurisdictions, consistent with their authorities.

In these routine types of SAR operations, the Coast Guard Addendum, NSS and NSP apply.

ESF #9 SAR & CISAR

In CISAR operations, the response system shifts to providing SAR resources through the ICS, which will include Federal, State, Tribal, Territorial, local, and volunteer SAR organizations. In addition to the USCG, DoD, NPS, FEMA and other SAR resources will be coordinated through the ICS to ensure their most effective and safe use.

USCG and ESF #9

Under ESF #9, the USCG is the Primary Agency for Maritime/Coastal/Waterborne SAR operations. This includes operations for natural and man-made disasters that primarily require DHS/USCG air, ship, boat, and response team operations. The Federal maritime/coastal/waterborne SAR response integrates DHS/USCG resources in support of integrated SAR operations conducted in accordance with the NSP.

In ESF #9 SAR operations, USCG SAR responders assist and augment State, Tribal, Territorial, and local SAR capabilities in incidents requiring a coordinated Federal response. USCG SAR responders will coordinate SAR activities with other SAR response agencies within the Incident Command.

In contrast, routine, immediate SAR operations (non-ESF #9) are conducted in accordance with the IAMSAR Manual, NSP, and NSS, which define SAR responsibilities and provide guidance to Federal Agencies with civil SAR mandates.

For CISAR, the SMC, as defined in the *NSP* and *Coast Guard Addendum*, will normally be placed within the IC, typically as the SAR Branch Director or SAR Group Supervisor in the Operations Section.

Simply put, the SAR response system “plugs into” the IC organizational structure, where the SMC (or someone designated by the Incident Command (IC) to carry out this function) serves as the “plug” or link.

USCG CISAR response assets will most likely be coordinated through the IC in support of the State, Tribe, Territory, or other Federal lead as dictated by ESF #9.

(Note: In order to support a multi-agency CISAR effort, Coast Guard responders must be NIMS/ICS qualified to ensure effective integration with other response organizations.)

National Command Center

The National Command Center is located at Coast Guard Headquarters in Washington, DC and can be reached at 202-372-2100.

USCG: CISAR vs. Routine SAR

The USCG may support CISAR operations with USCG assets that are organic to the region in which the catastrophic incident occurred. Other assets may also be deployed from other geographic locations.

In addition, the USCG will still continue to respond to other SAR operations within the U.S. maritime SAR regions and waters under the jurisdiction of the U.S. As such, this may require the USCG to retain SMC of USCG assets during these other SAR operations and may only be able to accept CISAR mission assignments on a not to interfere basis.

As CISAR operations are conducted, it is critical that the IC fully understands the USCG's continued responsibility to conduct other SAR operations in addition to supporting ongoing CISAR operations.

CISAR Coordination

Successful response requires unity of effort, which respects the chain of command of each participating organization while harnessing seamless coordination across jurisdictions in support of common lifesaving objectives.

This kind of support may well require USCG personnel to liaise/interact at the Federal, State, Tribal, Territorial, or local Emergency Operations Centers (EOC) - the physical location at which the coordination of information and resources to support on scene operations is conducted.

The EOC will most likely be staffed by personnel representing multiple Federal, State, Tribal, Territorial, or local emergency response agencies, the private sector, and nongovernmental organizations.

USCG Capabilities in support of a CISAR Response

The USCG uses a variety of platforms to conduct daily missions. A detailed listing of Coast Guard cutters, boats, aircraft, and response teams with their SAR capabilities can be found in the *Coast Guard Addendum*.

DARTs

Disaster Assistance Response Teams (DARTs) are small deployable boat teams that provide flood response SAR resources primarily in the Gulf of Mexico and mid west. DARTs consist of one trailer with tow vehicle, containing three flat bottom boats known as flood punts, four engines, and a set of standard rescue and operating equipment along with seven crew members.

DARTs are designed to provide SAR support, transportation of victims, essential waterborne logistic support, delivery of vital supplies and materials and provide access to storm-damaged area to key personnel. DART operations can be conducted in still or standing waters but do not involve swift water response.

Air Coordination Officers

The USCG maintains a cadre of air coordination officers. These aviation qualified officers are skilled in the capabilities and use of USCG aviation assets. If a Federal, State, Tribal, Territorial, or local government requests USCG aviation assets to aid in the response to a catastrophic

incident, they should also ensure an air coordination officer is also provided.

This officer or team of officers facilitates the integration of USCG air assets into the CISAR operation through the applicable airspace coordination plan, thereby ensuring that Coast Guard aviation assets are properly and safely deployed. In addition, the Air Coordination Officer will support the overall CISAR effort by exchanging current intelligence, operational data and support requirements.

References

The information in this section was obtained from the following sources:

- *Coast Guard Addendum to the U.S. Search and Rescue Manual to the IAMSAR Manual;*
- *Coast Guard Incident Management Handbook;*
- *Coast Guard Eighth District Instruction 3010.2A Disaster Assistance Response Team for Flooding Response;* and
- *National Response Framework.*

Section 1-8: National Park Service (NPS)

NPS Authority

NPS Regional Offices

NPS, ESF #9 Land SAR Lead Primary Agency

NPS Authority

The National Park Service (NPS) is an agency within the Department of Interior (DOI).

The NPS traditionally provides visitor protection services - including SAR - within areas of the National Park System. The provision of these services is in accordance with the Organic Act of August 25, 1916 (16 USC). This Act allows for the rendering of emergency rescue and law enforcement for related purposes outside of the National Park System.

NPS Regional Offices

Each of the seven regional NPS offices coordinates SAR resources and training through the NPS Regional SAR Coordinator. This Coordinator will facilitate the management of SAR resources and maintains equipment and supplies that can be available during CISAR operations.

ESF #9 Land SAR Lead Primary Agency

Under ESF #9, NPS is the Lead Primary Agency for Land SAR.

NPS Land SAR Teams provide personnel, equipment, and supplies for conducting operations during a CISAR event. These teams are specially trained to operate in various roles including ground search, small boat operations, swiftwater rescue, helo-aquatic rescue, and other technical rescue disciplines.

In particular, NPS Small Boat Task Forces (SBTF) provide personnel and shallow draft vessels for use in situations where rescue and evacuation are necessary.

NPS maintains preconfigured teams that include personnel and equipment from the NPS, the U.S. Fish and Wildlife Service, U.S. Geological Survey, Bureau of Indian Affairs, and other DOI components in planning for ESF #9.

The National Park Service's Emergency Incident Coordination Center (EICC) operates 24/7 and provides resource management for routine law enforcement and SAR events. During a CISAR event, the EICC provides coordination of the agency's assets.

The EICC may be contacted at 540-999-3422.

Section 1-9: States

Overview

Providing and Requesting Assistance

SAR Agreements and Plans

Emergency Management Assistance Compact

Declarations Process

States

"The Federal Government recognizes the roles and responsibilities of State and local authorities in domestic incident management. Initial responsibility for managing domestic incidents generally falls on State and local authorities. The Federal Government will assist State and local authorities when their resources are overwhelmed, or when Federal interests are involved. The Secretary [of Homeland Security] will coordinate with State and local governments to ensure adequate planning, equipment, training, and exercise activities. The Secretary [of Homeland Security] will also provide assistance to State and local governments to develop all-hazards plans and capabilities, including those of greatest importance to the security of the United States, and will ensure that State, local, and Federal plans are compatible."

*Homeland Security Presidential Directive 5 (HSPD-5),
Paragraph 6*

Overview

Key State-level SAR issues include:

- Designation of responsible State SAR authorities;
- Effective SAR planning and resourcing;
- Support to local governments;
- Balancing lifesaving and jurisdictional concerns; and
- Requesting assistance.

Providing and Requesting Assistance

The State provides assistance to local governments if requested. States have significant resources of their own that include emergency management and homeland security agencies, State Police, health agencies, transportation agencies, incident management teams, specialized teams, and the National Guard.

If additional resources are required, States may request assistance from other States through interstate mutual aid and assistance agreements such as the Emergency Management Assistance Compact (EMAC) as discussed below.

If an incident is beyond State and local capabilities, the Governor can seek Federal assistance. The State will collaborate with the impacted communities and the Federal Government to provide the assistance requested.

SAR Agreements and Plans

Most States have signed SAR agreements and/or plans with the Federal SC designated in the NSP responsible for their respective areas. For example, the Air Force, via the AFRCC, has an MOA with each Governor and MOUs with many State authorities responsible for SAR. In addition to these MOAs, States are encouraged to develop

integrated plans that cover CISAR operations and the integration of Federal assets in support of these operations.

Emergency Management Assistance Compact (EMAC)

EMAC is administered by the National Emergency Management Association, which provides form and structure to the interstate mutual aid and assistance process. All States belong to the EMAC system.

Most CISAR operations will involve National Guard forces. National Guard forces deployed through EMAC typically will remain under the control of their respective State.

Declarations Process

The Stafford Act and implementing regulations (44 CFR 206) set forth a process for a Governor to request the President to declare a major disaster or emergency. A major disaster will be declared if:

- An event is beyond the combined response capabilities of the State and affected local governments; and

- If, based on the findings of a joint Federal-State-local Preliminary Damage Assessment (PDA), the damages are of sufficient severity and magnitude to warrant assistance under the Stafford Act. In a particularly fast-moving or clearly devastating disaster, there may be an expedited declaration, and the PDA may be deferred until after the declaration.

The President may direct emergency assistance without a Governor's request if an incident occurs that involves a subject area is exclusively or preeminently the responsibility of the United States. The President will consult the Governor of any affected State, if practicable.

FEMA may provide accelerated Federal assistance and support where necessary to save lives, prevent human suffering, or mitigate severe damage, even in the absence of a specific request (The Governor of the affected State will be consulted if practicable, but this consultation shall not delay or impede the provision of such rapid assistance.).

Section 1-10: Nongovernmental Organizations

Functions

Working Relationships

Private Sector

Functions

Nongovernmental Organizations (NGOs) render assistance through existing EOCs and other structures. NGOs can provide invaluable assistance to CISAR operations, including shelter, emergency food supplies, assistance with animals, and other vital CISAR support services. These groups often provide specialized help for individuals with special needs, including those with disabilities.

Working Relationships

Effective interagency coordination with NGOs requires pre-event planning in order to leverage the capabilities of these cost effective resources. These organizations are capable of providing operational and

logistical expertise and can also help manage volunteer services and donated goods. Voluntary Organizations Active in Disaster (VOADs) and faith based organizations will contribute services that will enhance the CISAR response. Pre-event planning is the key to leveraging NGO capabilities.

Private Sector

The private sector is responsible for most of the critical infrastructure and key national resources and thus may require assistance in the wake of a disaster or emergency. They also provide goods and services critical to CISAR response efforts, either on a paid basis or through donations.

Part 2: CIS Planning and Management

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Section 2-1: CISAR Operating Principles

Immediate Support

Scope of Operations

Immediate Response

Response Actions

Key Principles

Balance of Concerns

Tiered Approach

Immediate Support

The main role of Federal CISAR responders is to support the IC.

Federal support must be provided in a timely manner to save lives, prevent human suffering, and mitigate severe damage. This may require mobilizing and deploying assets before they are requested via normal NRF protocols.

The nature of a catastrophic incident may immediately overwhelm State, Tribal, Territorial, and local response capabilities and require immediate Federal support. Federal support can be provided immediately under the authority of the NSP, and also in the form of initial assistance that FEMA is able to provide under the NRF.

Lifesaving Priority

A CISAR operation may involve very large numbers of persons needing assistance, and priority must be given to human lifesaving.

Lifesaving efforts must be immediate to be effective.

Scope of Operations

The nature and scope of a catastrophic incident may result in large numbers of persons in distress and include chemical, biological, radiological, nuclear or high-yield explosive attacks, disease epidemics, and major natural or manmade hazards.

Multiple incidents may occur simultaneously or sequentially, in contiguous or noncontiguous areas.

The incident may cause significant disruption of the area's critical infrastructure, such as energy, transportation, telecommunications, and public health and medical systems.

Local CISAR response capabilities and resources (to include mutual aid from surrounding jurisdictions and support from the State, Tribe, or Territory) may be insufficient and quickly overwhelmed. State, Tribal, Territorial, and local emergency personnel who normally respond to incidents may be among those affected and unable to perform their duties.

Immediate Response

When appropriate for lifesaving, Federal Departments and Agencies that conduct SAR operations generally have authority to respond immediately (includes DoD component commands).

Normally, awareness of the need for immediate response becomes known due to direct receipt of calls for help from persons in distress (such as distress alerts to a Rescue Coordination Center - RCC), or requests for assistance from some recognized civil authority.

(Note: Nothing in any Federal plan is ever intended to preclude prompt assistance to persons in distress when it can reasonably be given.)

With rare exceptions (e.g., critical national security situation, interference with critical military duties), jurisdictional, legal, or financial considerations should not preclude prompt response to save lives.

Typically, a unified response builds upon the work of those providing immediate aid to those in distress.

Response Actions

Four key response actions typically occur in support of CISAR operations:

- Gain and maintain situational awareness;
- Activate, pre-position, and deploy key resources and capabilities;
- Effectively coordinate response actions; and
- As the situation permits, demobilize.

The NRF provides a detailed overview of these response tasks.

Key Principles

Key principles that must be applied for successful CISAR operations are:

- Engaged partnership;
- A tiered response;
- Scalable, flexible, and adaptable capabilities;
- Unity of effort and command; and
- Readiness.

In addition, the principle of using all available resources to save lives is especially pertinent in demanding CISAR operations.

Balance of Concerns

In CISAR operations, lifesaving must be weighed against the risks taken by CISAR responders (see Section 2-4: Risk Assessment). To save lives and protect property, decisive action on scene is often required of emergency responders. Although some risk may be unavoidable, first responders can effectively anticipate and manage risk through proper training and planning.

Tiered Approach

CISAR operations must be implemented through a tiered approach (See Figure 2-1-1 on the next page):

- If required, State assistance will supplement local efforts; and
- When requested, Federal assistance will supplement State, Tribal, Territorial, and local CISAR efforts.

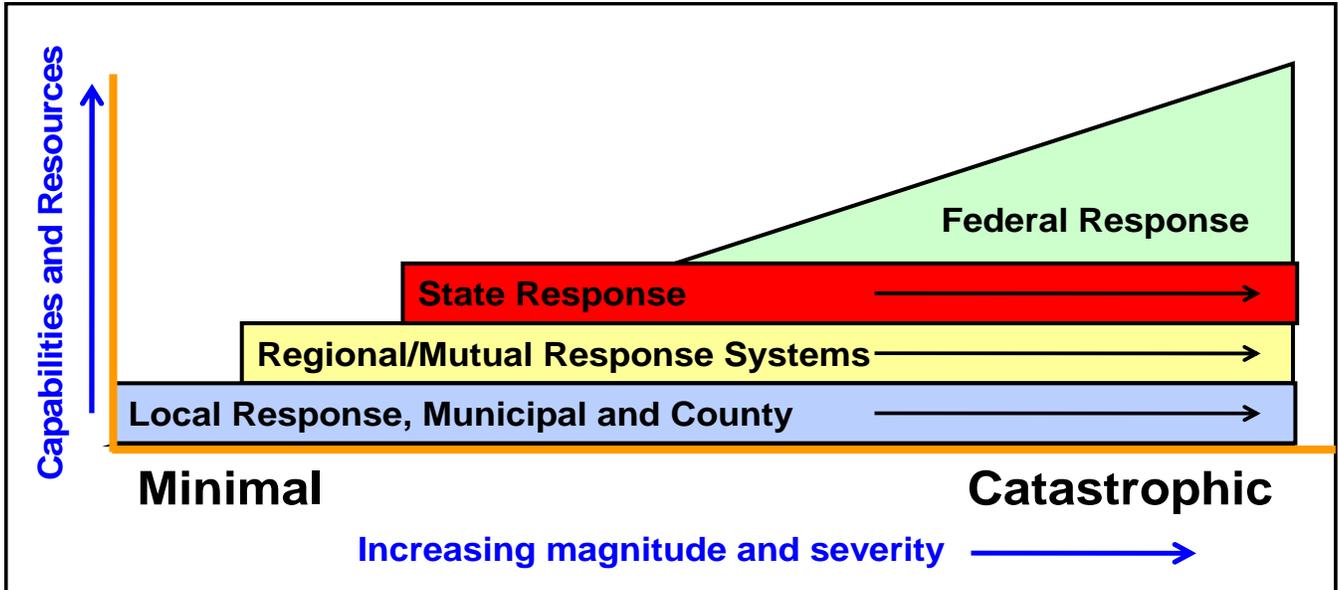


Figure 2-1-1: Tiered Approach to CISAR Operations

Section 2-2: CISAR Planning Considerations

CISAR Planning Considerations

Lessons Learned: Hurricane Katrina

Integrated Planning System

Federal, State, Local, Tribal, and Territorial Planning Relationships

CISAR Planning Fundamentals

CISAR Chain of Events

Time Driven Objective and Resources to Support

Resource Efficiency (Capability vs. Time)

Search Theory and Search Effectiveness

Lily Pad and Survivor Transportation Planning Considerations

SAR Action Plans

CISAR Coordination Cell

Planning Cycle

CISAR Planning Considerations

Interoperability, synchronization, and efficient unity of effort among multiple agencies are fundamental imperatives to life-saving during overwhelming Mass Rescue Operations (MRO) within a CISAR environment.

Coordinated and integrated operational efficiency in support of State, Tribal, Territorial, and local SAR operations can only be achieved through integrated, standardized planning. This Section highlights new emerging concepts, procedures, and planning considerations to assist the CISAR planner at all levels of

government and planning architectures (strategic, operational, and tactical).

Goal of CISAR Planning

To enable a collaborative, interagency planning process and achieve standardized interoperability among all agencies and resources across all domains; to locate, rescue, and safely transport persons in distress within an unbroken operational chain of events in the timeliest manner possible.

Planning in normal day-to-day SAR is to find survivors of a distress incident as quickly as possible, subject to resources available. Subsequently, the actual rescue and transport to safety of survivors during normal SAR seldom requires extensive

planning and is normally accomplished uneventfully through agency specific practices and standard operating procedures.

However, timely rescue and transport to safety in response to the immediate need of extremely large numbers of persons in distress following a catastrophic incident will likely be insufficient and hampered by damage to critical infrastructure and key resources.

During an MRO, the overwhelming magnitude of individuals needing rescue will likely dominate the immediate operational requirement. As such, the “search” portion of SAR and the scientific mathematics and algorithms used to develop optimal search plans may be of limited value in CISAR planning and operations.

Therefore, the development of a thorough, all domain (land, waterborne, and air), multi-agency integrated plan to efficiently affect recovery, provide medical treatment, and transport survivors to places of safety demands the full attention of SAR planners and decision makers at all levels of government.

The prospect of overwhelming numbers of people requiring immediate life-saving assistance poses the greatest challenge to CISAR planning and effective operations. This prospect will likely require timely implementation of resources from multiple agencies at all levels of government.

Lessons Learned: Hurricane Katrina

In the aftermath of Hurricane Katrina (2005), the extensive flooding requiring the rescue of thousands of distressed persons overwhelmed first responders. During the response, transporting small numbers of rescued persons many miles to places of safety or placing rescued persons on higher ground in the vicinity (in order to speed further rescues) with no follow-on assistance

proved grossly inefficient and left the survivors at continued risk.

Out of necessity, an all domain integrated operational chain of events was eventually developed and successfully implemented by first responders. Lily Pads (see Section 3-14: Delivery of Survivors) were identified for intermediate drop-off of distressed persons providing medical treatment and transport to places of safety allowing rescue resources to quickly return to scene. To be effective for future, similar operations, putting this unbroken chain of events into timely practice demands the utmost of integrated collaborative planning.

Planning is foundational for CISAR preparedness and response. CISAR planning will:

- Allow jurisdictions to influence the course of events in a CISAR operation by determining in advance the actions, policies, and processes to be followed;
- Guide other preparedness activities;
- Enable awareness of capabilities across the response community; and
- Contribute to unity of effort by providing a common response blueprint.

Integrated Planning System (IPS)

HSPD-8 (National Preparedness) Annex 1 (National Planning) directs that Federal Agencies apply IPS in developing plans based on the eight national planning scenarios, any of which can involve CISAR operations. (See Figure 2.2.2 for listing of the eight scenarios.)

The purpose of the IPS is to further enhance the preparedness of the United States by formally establishing a standardized and comprehensive approach to national planning. It provides a basic, general framework for developing a series of products leading to a synchronized Federal

plan. The IPS is a “how-to” guide for Federal Departments and Agencies to develop contingency planning documents that support State, Tribal, Territorial, and local governments.

The IPS provides individualized annexed guidance on the development of a family of related planning documents: Strategic Guidance Statements (SGSs), Strategic Plans, Concept Plans (CONPLANs), and Operations Plans (OPLANs).

IPS concepts and principles are consistent with NRF and NIMS planning systems. Along with the IAMSAR and NSP, the IPS should be the basis of CISAR Planning. IPS should be used as part of the planning process of the Incident Command System (ICS) established in the NIMS. The IPS also provides a method for Federal Agencies to maintain NIMS compliance because it is tied to the NIMS preparedness component.

Detailed SAR Action Plans should be utilized as CISAR Tactical Plans. Standardized SAR Action Plans will help minimize the planning cycle time, assist users in finding pertinent information, and help lessen the need to provide amplification of details.

Federal, State, Tribal, Territorial, and Local Planning Relationships

Federal, State, Tribal, Territorial, and local plans describe each respective government’s approach to SAR operations. Because these levels of government all provide support to operations conducted at the local level, plans have similar and overlapping functions.

Planning must be coordinated among all levels of government to ensure a singular operational focus. The goal is to ensure the effectiveness of combined Federal, State, Tribal, Territorial, and local operations through integration and synchronization.

Integrated planning helps define how Federal Departments and Agencies add the right resources at the right time to support State and local CISAR operations. From the States’ perspective, integrated planning provides answers to questions about working with other organizations and obtaining resources. Figure 2-2-1 on the next page shows the relationships among Federal, State, Tribal, Territorial, and local planning efforts.

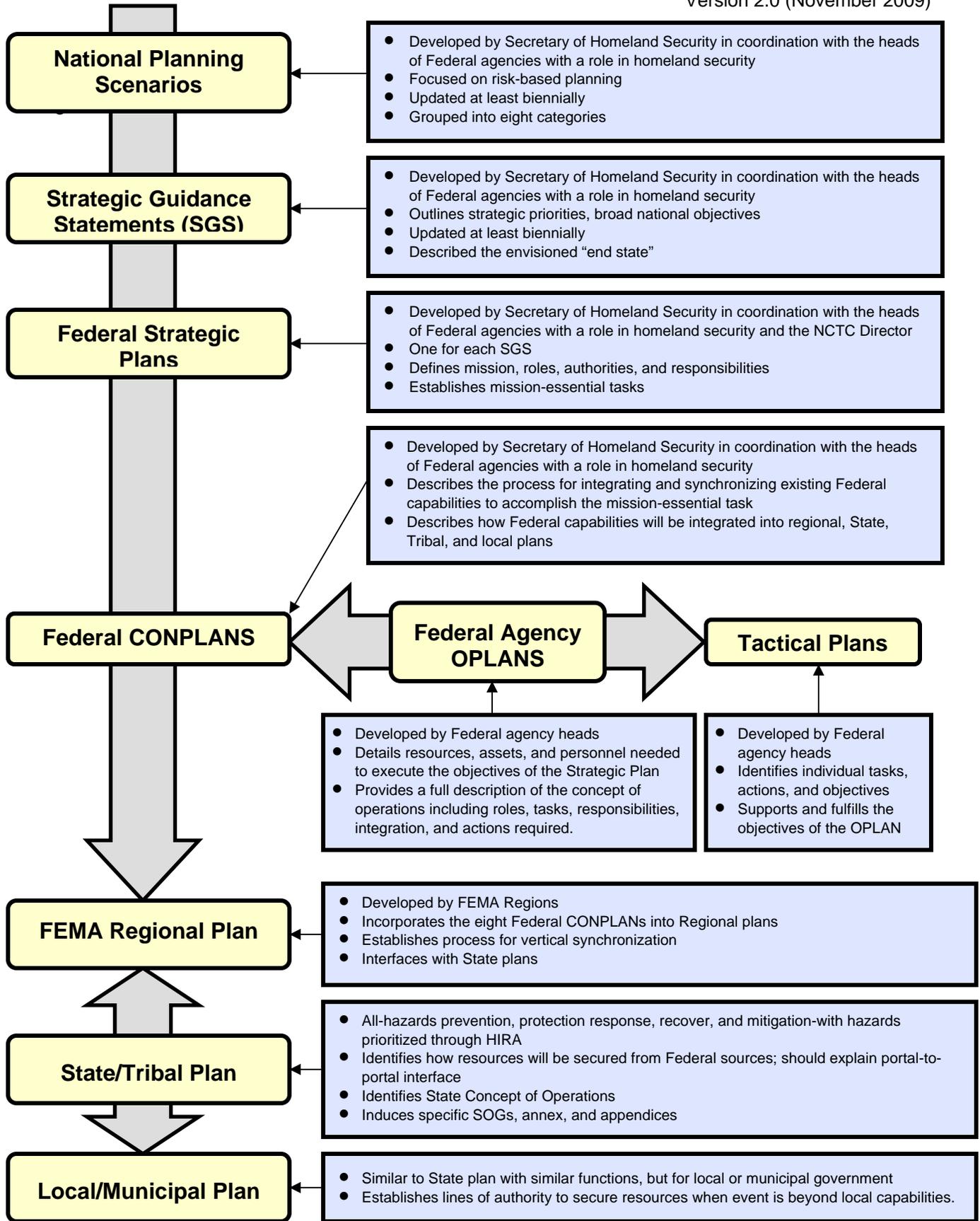


Figure 2-2-1 Federal and State Planning Relationships

IPS is flexible enough to accommodate the many State, Tribal, Territorial, and local government planning formats, styles, and processes. The IPS lays the initial foundation and provides a means for synchronizing operations across the spectrum of homeland security operations and thus enables integrating national CISAR planning efforts both horizontally across the Federal Government and vertically among Federal, State, Tribal, Territorial, and local entities.

State, Tribal, Territorial, and local governments are encouraged to comply with IPS by using the FEMA Comprehensive Preparedness Guide (CPG) 101. This guide:

- Provides general guidelines on developing Emergency Operations Plans (EOPs);
- Promotes a common understanding of the fundamentals of planning and decision making; and
- Can help emergency planners produce integrated, coordinated, and synchronized SAR plans.

Together, IPS and CPG 101 support national vertical integration by clearly articulating Federal planning procedures to State, Tribal, Territorial, and local governments and establishes a consistent SAR planning process across all levels of government (Figure 2.2.2 below).

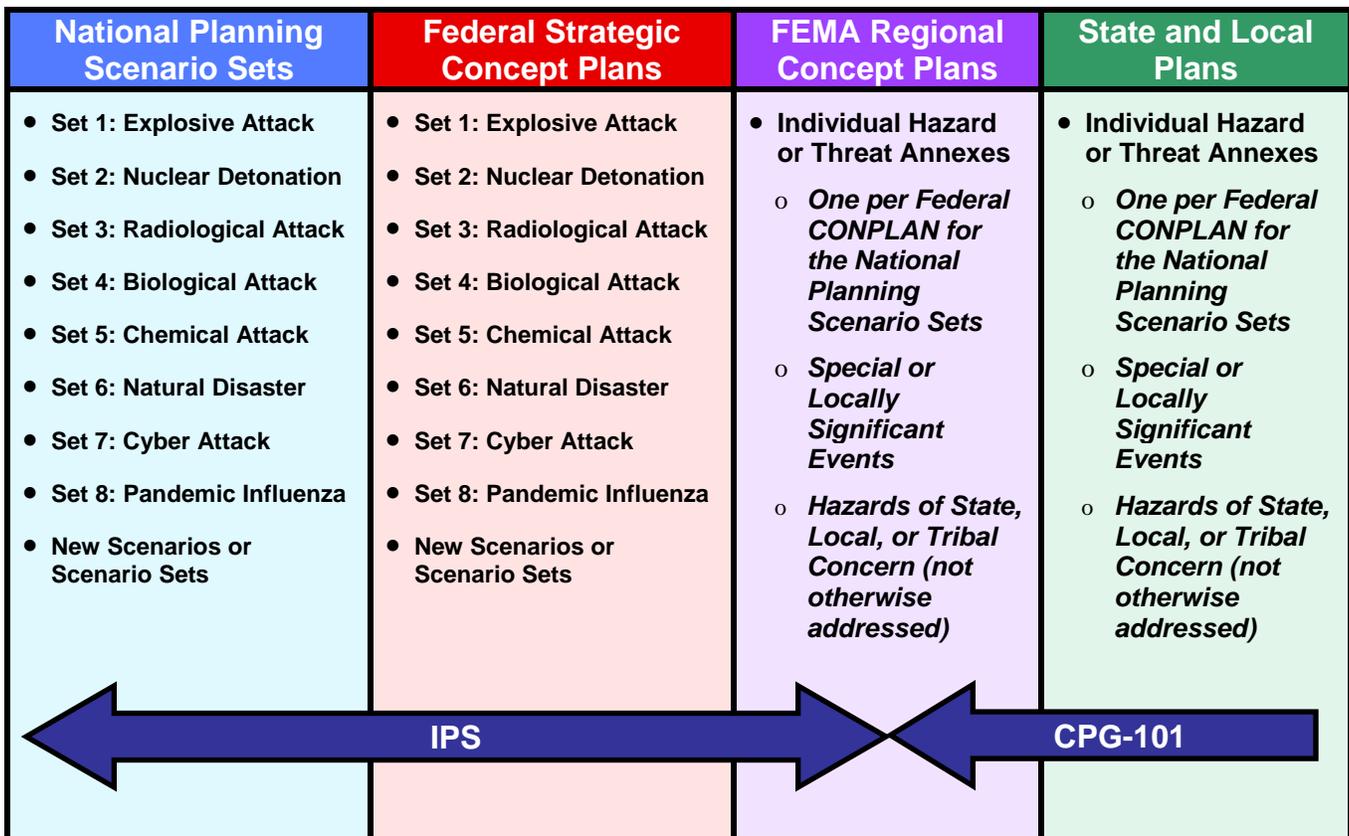
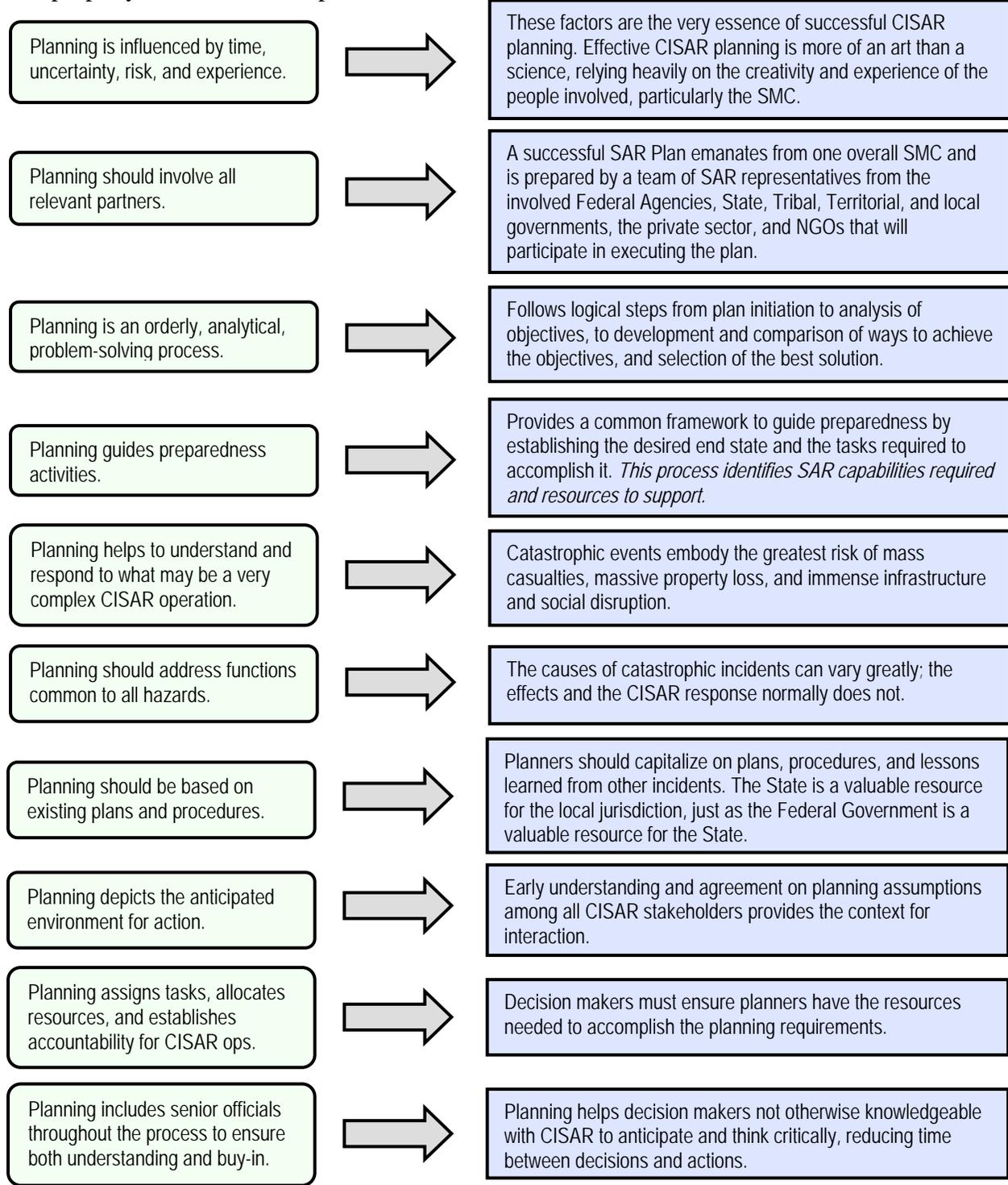


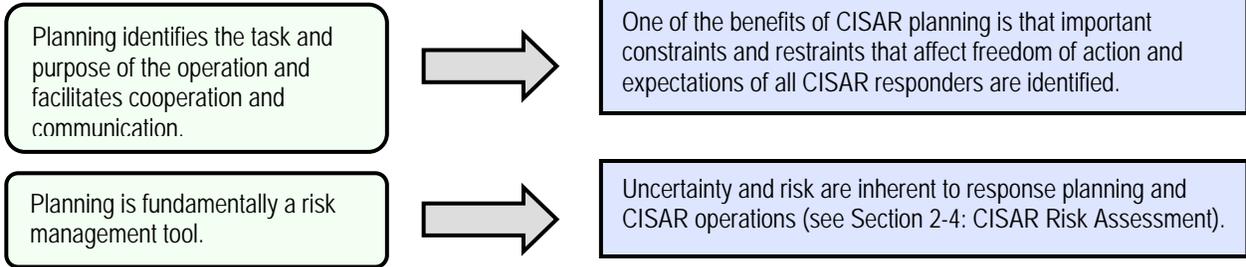
Figure 2.2.2 Linkages between Federal, State, and Local Planning

CISAR Planning Fundamentals

The challenge of planning for saving lives and property is made easier if planners

consider the following common fundamentals during the planning process:





Time Driven Objective and Resources to Support

The primary objective of CISAR is two-fold and time driven:

- Special Response Teams (SRT) and Rapid (Hasty) searches completed within 24 hrs; and
 Primary searches completed within 48 hours.
 (See Section 3-11: CISAR Searches.)

With the possibility of overwhelming MRO within a CISAR environment, time is the enemy. Knowledge of the resources required to achieve these objectives within the specified time is paramount. Capability gaps to achieve time driven objectives must be identified at the local level. Any additional resource requirements must be requested as early in the planning process as possible.

Planners at all levels of government should use a capabilities based approach to determine CISAR resource requirements. An incident specific gap analysis should be the basis for State, Tribal, Territorial, and local SAR planners in their initial determination of the necessary resources required to achieve CISAR objectives. This approach will also provide better clarity and justification for external resource requests (e.g., EMAC, Pre-scripted Mission Assignment (PSMA), Federal Request for Assistance (RFA)).

Questions may need to be posed, variables will need to be considered, and factors will need to be determined in order to better ascertain CISAR resource requirements. Table 2-2-1 below asks several questions that should be considered when conducting CISAR planning.

Table 2-2-1: CISAR Planning Questions	
Question	Follow On Considerations
What are the areas at risk?	What is the size of the area(s) that require searching?
What is the potential number of persons in distress?	What is the Population Density (Urban) or Domiciles per square mile (Rural).
What are the environmental concerns?	Geographic; Forecasted weather; and Night operations.
Can CISAR objectives be met with State, Tribal, Territorial, and local resources?	SRT, Rapid (Hasty) Searches; Primary Searches; and Desired search effectiveness (Probability of Success (POS)).
What are some enabling capabilities?	Lily Pad sourcing; Hot refueling.
What additional SAR requirements should be considered?	What SAR resources are available?

CISAR Chain of Events

Table 2-2-2 below is the general chain of events that occur during CISAR operations.

Table 2-1-2: Standard CISAR Chain of Events	
Event	Actions
1. Search	Locate (Special Response Teams (SRT), Rapid (Hasty), and Primary Searches)
2. Rescue	Via air, land, and/or waterborne
3. Transport	Lily Pads, Places of Safety, and/or out of area transport

Resource Efficiency (Capability vs. Time)

As previously stated, planners should use a capabilities based approach to determine CISAR resource requirements. However, a capabilities based assessment cannot be accomplished without reasonable knowledge of the resource efficiencies of available or potential requested assets. Many key State EPLOs and State SCs have communicated a need for this knowledge and have requested resource efficiency guidance to further assist in SAR planning.

Table 2-2-3 below provides general aviation resource efficiency rates as a guide for planners to consider when determining CISAR resource requirements.

Table 2-2-3: General Aviation Resource Rates	
Helicopters	Fixed-Wing Aircraft
<p align="center">Search</p> <ul style="list-style-type: none"> 17 - 25 square miles per hour per helicopter; Based on 60 – 90 mph, ¼ mile track spacing Area searched per hour may vary depending on actual search speed and track space flown as search area conditions (Urban, Suburban, Rural) and environmental factors dictate. <p align="center">Rescue and Transport to Lily Pad</p> <p>Assume non standard load of persons for transport (passengers), 15 minutes on scene and 5 minutes or less to/from Lily Pad:</p> <ul style="list-style-type: none"> Light Helicopter (HH65, UH-1): 15 passengers per hour Medium Helicopter (H60, CH46): 50 passengers per hour Heavy Helicopter (CH-53; CH-47) Ground pick-only: 150 passengers per hour 	<p align="center">Search</p> <ul style="list-style-type: none"> 50 – 100 square miles per hour per airframe; Based on 90 – 180 mph, ½ mi Track Spacing; Light (Civil Air Patrol (CAP); Unmanned Aerial Vehicle (UAV)): 50 square miles per hour; Medium (HU25, HC130): 100 square miles per hour; Area searched per hour may vary depending on actual search speed and track space flown as search area conditions (Urban, Suburban, Rural) and environmental conditions dictate.
<i>(Note: Extended CISAR operations may required additional aircraft.)</i>	

Search Theory and Search Effectiveness

The science of CISAR is not nearly as developed as SAR planning and operational disciplines that have matured over many

years within the maritime and isolated inland domains. However, truly effective SAR planning is more of an art than a science and relies heavily on the creativity and experience of the people involved,

particularly the SMC (see Section 2-7). The CISAR planner should utilize and adapt traditional search planning methods to the CISAR environment.

Uncertainties are enormously magnified during CISAR planning. What normally is a simple determination of what resources are required for day-to-day SAR becomes a challenge to even the most experienced planner in a CISAR environment.

Despite the lack of CISAR specific search theory applications, search planners should utilize existing search theory and modeling applications and mold them to the CISAR environment to determine search effectiveness.

Search effectiveness is the probability that a given search will succeed in locating the search object and is measured and defined within traditional search theory in terms of a percentage of Probability of Success (POS). POS is the resultant of Probability of Detection (POD) and Probability of Containment (POC).

The CISAR planner must have adequate resources available in order to achieve CISAR time driven objectives. In attempting to assess required resources, the planner must weigh uncertain variables against known resource efficiency and factor these assessments against the desired search effectiveness (POS).

Lily Pad and Survivor Transportation Planning Considerations

Advanced Lily Pad planning and survivor transportation capabilities are critical to affecting the efficient unbroken chain of rescuing large numbers of distressed persons in a CISAR environment.

(Note: Section 3-14: Delivery of Survivors further addresses Lily Pads and services that can be provided to survivors awaiting further transport to Places of Safety.)

With the primary function of enabling the swift drop off of distressed persons, Lily Pads can be as austere as an isolated open field or riverbank, or be equipped with a spectrum of services for both survivors and responders.

For the following reasons, planners should consider identifying schools, particularly high schools, as a primary source for Lily Pads:

- *Abundance.* Schools are proportionally dispersed among the population, both rural and urban. One or more are likely to be close to any incident scene.
- *Landing Zones.* Even in the most congested of urban areas, schools normally afford ample landing areas for helicopters (football, baseball, soccer fields)
- *Shelter.* Schools are excellent temporary shelters for survivors & billeting for responders (classrooms, gymnasiums)
- *Sustenance.* Schools have facilities to prepare and/or serve food (cafeterias).
- *Onward Movement.* Schools have large parking lots and pre-existing entry and exit routing that can facilitate further transport of survivors.

For potential area(s) at risk (e.g., flooding), Lily Pads, and routes to Places of Safety can be identified, named, and included to existing plans in advance. For natural disasters such a hurricanes and other flooding scenarios, Lily Pads can be individually activated within a SAR Action Plan following an incident/storm passage when damage/post storm assessment dictates the most operationally efficient pads.

SAR Action Plans

For a CISAR incident, the State SC will normally be the overall SMC for the incident, supported by other assisting

agencies and resources. SMC is responsible for developing a well integrated SAR Action Plan and the employment of the most efficient and effective use of available resources within all domains

(Note: SAR Action Plan examples are located in the USCG Addendum to the NSS).

CISAR operations are too large, may involve a significant number of agencies, and are too dynamic and time sensitive to expect acceptable results from anything other than management from a single SMC. The SMC is responsible for the development of an integrated SAR Action Plan and the ongoing prosecution of missions within every domain. This singularly managed, all-domain approach has been proven during the conduct of MRO for decades.

CISAR Coordination Cell

Before and during CISAR operations, the SMC should implement a CISAR Coordination Cell, well resourced with

Federal, DoD, State, and local experienced SAR planners. Working together, the SAR Coordination Cell will develop an integrated and efficient SAR Action Plan.

The CISAR Coordination Cell is a very simple (and relatively small) group where SAR Action Plans are discussed, coordinated, developed, assigned, disseminated for execution, and managed through the SMC.

Recently, the CISAR Coordination Cell concept was soundly proven during the 2008 hurricane season by the State of Texas.

Planning Cycle

CISAR operations typically require more than one operational period. A regular planning cycle should provide for establishing objectives, and deploying SAR resources. The SMC should develop a 24-hour planning cycle to ensure the timely flow of information and operational requirements (Figure 2.2.3 below).

06:00	Operations brief.
07:00	Begin operational period.
09:00	Command & General Staff meeting.
13:00	Branch level Unified Command meeting (State, USCG, FEMA/US&R, DOI, DoD).
15:30	Field units report to Group/Division Supervisors on progress and operational needs for next operational period.
16:00	Group/Division Supervisors report to Branch Director(s) on progress and operational needs for next operational period.
16:30	Branch Director(s) report to Operations Section Chief on progress and operational needs for next operational period.
17:00	Tactical meeting.
19:00	Planning meeting to establish Incident Action Plan (IAP) for next operational period.
20:00	Approval of IAP.
00:00	SAR Situation Recon / Night SAR as necessary.
03:00	Tactical meeting for Operations brief.

Figure 2.2.3: Example 24-Hour Operations Cycle

Section 2-3: Notice and No-Notice Events

Introduction

Pre-event Opportunities

Preparations

Pre-Event Actions

Introduction

A catastrophic incident may occur with little or no warning.

Substantial information (e.g., storm forecasts) or clues (e.g., disease symptoms) may provide additional time to prepare before or in case CISAR operations are required.

Other events, such as earthquakes, may occur with no warning. Such events are referred to as “no-notice” events. A CISAR response caused by, for example, a hurricane, would be considered a “notice” event.

Pre-event Opportunities

Notice events, such as approaching hurricanes, provide CISAR responders with the opportunity to predict the response demands, pre-position CISAR aircraft, boats, and response teams, and develop specific action plans.

No-notice events like earthquakes and some man-made disasters happen unexpectedly.

Response activities to notice and no-notice events are similar. However, maximum advantage should be taken of any time available before an expected event to maximize the success of post-event efforts.

Preparations

Before a notice event actually occurs, SAR authorities should:

- Designate the SMC;
- Review applicable SAR plans;
- Update the readiness status of available SAR resources;
- Determine additional SAR resource requirements;
- Track the status of evacuations: and
- Monitor the storm or other threat.

Pre-Event Actions

To further prepare for a notice event, the following actions may be taken:

- Carry out CISAR operations just before and after the event, as appropriate;
- Issue standby orders;
- Keep all status reports up-to-date;
- Inform key authorities of intended SAR actions;
- Prepare the IC;
- Review and brief reporting procedures;
- Support CISAR aircraft, boats, and response team logistics requirements;
- Ensure that no SAR command and control issues are left unresolved;

- Implement plans for supplemental personnel and resources;
- Pre-position CISAR responders;
- Ensure that charts and grids of the geographic region are available for use by CISAR responders;
- Determine what Temporary Flight Restrictions (TFRs) will be required;
- When required, arrange TFR implementation;
- Ensure that the evacuation of personnel and equipment is implemented that would otherwise compound subsequent CISAR operations; and
- Identify and ensure that lily pads and other places of safety are ready.

Section 2-4: Risk Assessment

Introduction

CISAR Risk Assessment: One Model, Two Parts

Part 1: Assess the Risk – GAR (Green, Amber, Red)

Part 2: CISAR Risk Mission Analysis

Introduction

SAR is inherently dangerous to both the victim and the CISAR responder. The danger will most likely be greater in response to a catastrophic incident due to factors such as workload, environment, mission complexity, and inexperience. The CISAR environment and operational tempo make risk management even more critical for both operations management and force protection.

Risk assessment is a continuous process that should be conducted by the SMC and each CISAR responder. When a mission situation changes, risk should be reevaluated with any associated mitigation options discussed. These periodic updates are necessary anytime there is a significant change to either the environment or the SAR mission.

Every member of the CISAR response team should participate in the risk assessment process. Each person brings experiences to a risk assessment that others on the team may not have taken into account. This team approach to risk management also allows each member of the team to be made aware of the challenges and related risks of the mission.

The few moments CISAR responders take to assess the risks of a particular CISAR mission may be crucial in mitigating safety hazards.

CISAR Risk Assessment: One Model, Two Parts

CISAR responder risk assessments should be conducted in accordance with their respective agency procedures. If no such procedures are available, the following risk assessment process may be used.

There are two parts.

Part 1: Assess the Risk – Green Amber Red (GAR)

Part 1 guides CISAR responders and managers in determining risk for a particular CISAR mission. When using the GAR Risk Assessment tool, a numerical value is obtained and the risk is identified.

Part 2: Perform CISAR Mission Risk Analysis

In Part 2, the GAR identified risk is placed in Step 3 of the CISAR mission analysis flow chart.

Use this simple model or an agency specific process to assess risk. Assessing risk in an ongoing process and should be reassessed continually throughout the CISAR operation.

Part 1: Assess the Risk – GAR (Green, Amber, Red)

Factors identified in Table 2-4-1 on the next page should be used when assessing risk for a particular CISAR mission:

Table 2-4-1: Factors to Consider When Assessing CISAR Risk

Factor	Explanation
Supervision	How closely do you need to supervise the SMC, CISAR responder team or crew? The higher the risk, the more a supervisor needs to focus on observing and checking.
Planning/Preparation	How much information is available? How clear is the information? How much time is available to plan and execute the mission?
Crew Selection	Consider the experience of the CISAR responders performing the mission. If individuals are replaced during the mission, assess their experience level and ensure proper turnover.
Crew Fitness	How tired are the CISAR responders? How many missions have they performed?
Environment	Factors that affect personnel, unit readiness, and resource performance. These factors may include time of day, visibility, ceiling level, proximity to other external and geographic hazards and barriers and amount of infrastructure damage.
Mission Complexity	Consider both the time and resources required to conduct the mission. The longer the exposure to hazards for the CISAR responder and the person(s) in need of assistance, the greater the risks involved. What is the precision level needed to successfully complete the mission?

Calculating Risk: To identify the total degree of risk, for each factor in Table 2-4-1 above, assign a risk value of 0 (no risk) up to a value of 10 (maximum risk) for each of the factor

(Note: These number values are subjective, based on the experience of the individual or group).

Add the values. Based on the risk number, use the criteria in Table 2-4-2 below to assign a GAR Risk Assessment.

Table 2-4-2: GAR Evaluation Scale

1-23	24-44	45-60
Green	Amber	Red
Low risk.	Medium risk. Consider procedures and actions to minimize	High risk. Implement measures to reduce risk prior to starting mission

Determine the CISAR mission risk based on the criteria in Table 2-4-3.

Table 2-4-3: GAR Risk Assessment Tool			
	High Gain	Medium Gain	Low Gain
Low Risk (1-23)	Accept the Mission. Continue to monitor Risk Factors for any condition or mission changes.	Accept the Mission. Continue to monitor Risk Factors for any condition or mission changes	Accept the Mission. Reevaluate Risk vs. Gain should Risk Factors change.
Medium Risk (24-44)	Accept the Mission. Continue to monitor Risk Factors. Identify, and if possible, employ any potential options to mitigate identified hazards that exceed an acceptable degree of risk.	Accept the Mission. Continue to monitor Risk Factors. Identify, and if possible, employ any potential options to mitigate identified hazards that exceed an acceptable degree of risk.	Accept the Mission. Continue to monitor Risk Factors. Actively pursue any possible options to mitigate identified hazards to reduce Risk.
High Risk (45-60)	Accept the Mission only with parent agency endorsement. Communicate Risk vs. Gain to SMC and Incident Command. Actively pursue options to reduce risk.	Accept the Mission only with parent agency endorsement. Communicate Risk vs. Gain to SMC and Incident Command. Actively pursue options to reduce risk.	Do not accept the Mission. Notify parent agency, SMC and Incident Command. Wait until Risk Factors change; as possible, mitigate identified hazards to reduce risk.

Part 2: Perform CISAR Mission Risk Analysis

After the risk assessment is made (Part 1), perform a CISAR Mission Risk Analysis by using Figure 2-4-1 on the next page. Part 2

uses the risk value obtained in Part 1, which is placed in Step 3 of Figure 2-4-1.

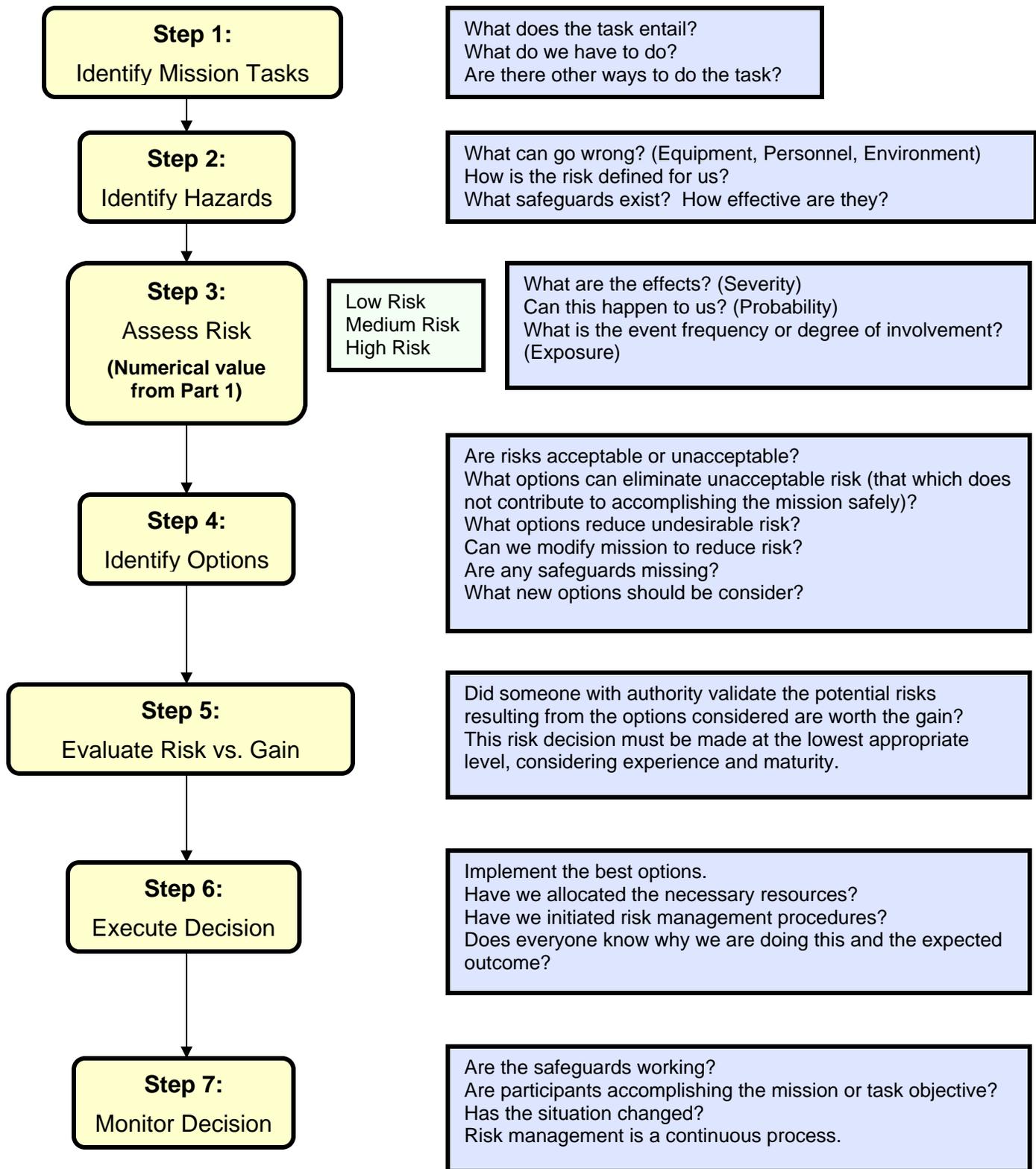


Figure 2-4-1: Part 2 - CISAR Mission Risk Analysis

Section 2-5: National Incident Management System (NIMS)

NIMS

CISAR Unity of Effort

Incident Commander

SAR System

NIMS

"The Secretary [of Homeland Security] shall develop, submit for review to the Homeland Security Council, and administer a National Incident Management System (NIMS). This system will provide a consistent nationwide approach for Federal, State, and local governments to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, and local capabilities, the NIMS will include a core set of concepts, principles, terminology, and technologies covering the incident command system; multi-agency coordination systems; unified command; training; identification and management of resources (including systems for classifying types of resources); qualifications and certification; and the collection, tracking, and reporting of incident information and incident resources."

*Homeland Security Presidential Directive 5 (HSPD-5),
Paragraph 15*

NIMS

As indicated in HSPD-5 and the NRF, the National Incident Management System (NIMS) is to be used for ESF #9 and CISAR operations. All Federal Departments and Agencies involved in CISAR operations must adopt and implement NIMS where applicable.

The NRF discusses the NIMS core concepts, principles, terminology, and technologies. Information and training for NIMS is available from FEMA

(<http://training.fema.gov/IS/NIMS.asp>) and other sources.

CISAR Unity of Effort

Unity of effort during CISAR operations requires a clear understanding of the roles of participants and seamless coordination across jurisdictions while respecting the chain of command of participating organizations. Familiarity with the NIMS concepts and principles is essential to the seamless integration of the CISAR operation with the other aspects of the incident response.

NIMS emphasizes:

- A single set of objectives;
- A collective, strategic approach;
- Optimizing information flow and coordination;
- Understanding joint priorities;
- Respecting legalities; and
- Maximizing probability of success under a single plan.

Incident Commander

Under NIMS the local IC has overall command and management of the incident response. This includes establishing and communicating strategic goals and operational objectives to all responding agencies and personnel.

SAR System

When the Incident Command is implemented, the SMC function will be placed under the umbrella of the NIMS organizational structure. Typically, the SAR Branch Director or SAR Group Supervisor is placed in the Operations Section, where the CISAR response system is integrated into the incident command (Figure 2-5-1). The CISAR response may also include an On Scene Coordinator (OSC) and an Aircraft Coordinator (ACO) to assist managing critical SAR resources.

In some cases, the person serving as IC may also be designated as the SMC. The terms “Incident Commander” or “Operations Section Chief” are not interchangeable with titles associated with SAR response functions.

To the extent practicable, consistent with NIMS and the IC’s Incident Action Plan (IAP), CISAR operations should be carried out in accordance with the normal planning, command and control, procedures, and terminology provided for in the NSP, NSS and associated addenda.

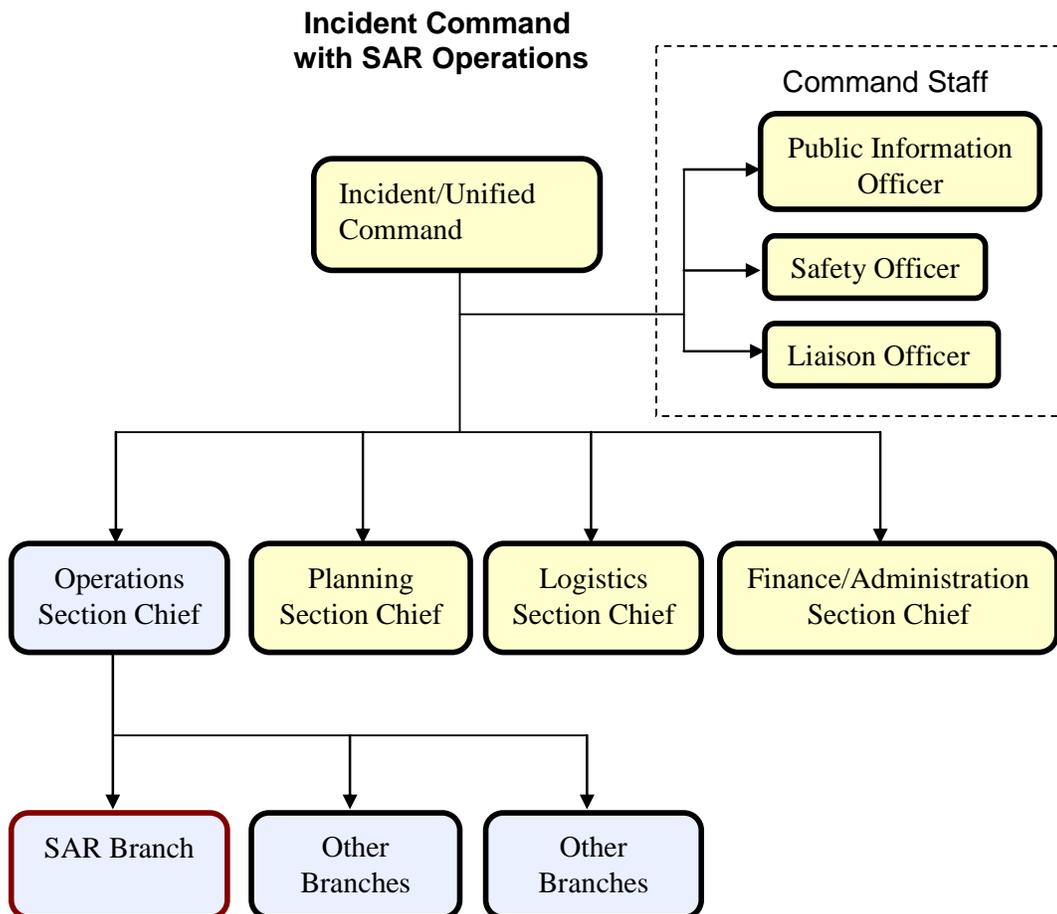


Figure 2-5-1

Section 2-6: CISAR Management

Introduction

Incident Commander (IC)

SAR Mission Coordinator (SMC)

On Scene Coordinator (OSC)

SAR-related Job Descriptions

Transition from CISAR Operations

Introduction

The IAMSAR Manual, NSP, and NSS are largely based on international conventions that U.S. SAR services are obligated to follow. These references are written to maximize the effectiveness of SAR operations, particularly when working with military services, SAR authorities of other nations, or with ships, or aircraft at sea.

In addition to following relevant provisions of these references for CISAR, the NIMS organizational structure should be used for overall response management. Use of NIMS is particularly important when non-SAR operations are being conducted in conjunction with a large CISAR operation. Examples of such non-SAR operations include search and recovery, salvage, investigation, fire fighting, pollution response, etc.

For large incidents that may involve both SAR and non-SAR activities, the SMC will initiate action and coordinate the overall CISAR response in accordance with the references mentioned above and NIMS.

Note: The USCG Incident Management Handbook is widely used by Federal agencies (available at www.uscg.mil/nsarc).

Chapter 13 addresses SAR within the context of a major incident.

Incident Commander (IC)

The IC of an incident that includes CISAR operations needs to recognize that the SMC is obligated to carry out the SAR mission in accordance with the NSP and associated guidance.

The IC may be designated as the SMC. However, separate individuals should carry out the IC and SMC functions if the operational tempo and/or span of control requires separate positions.

For large CISAR operations that may include other non-SAR activities, IC tasks may include:

- Standing up the Incident Command and NIMS organization;
- Mobilize additional appropriate resources as soon as possible to stabilize the situation or assist in the non-SAR operations;
- Contact the FAA to establish a Temporary Flight Restriction (TFR);
- Assign or request a Public Information Officer (PIO) to provide initial information to the media and establish a

24 hour Joint Information Center (JIC) to provide timely information and updates on progress of SAR efforts and outline of future actions;

- Be available to provide press briefings;
- Use appropriate assistance to notify Next-of-Kin (NOK) as soon as possible.
- Maintain daily contact with NOK to provide progress of SAR efforts and outline future actions; and

SAR Mission Coordinator (SMC)

The IC will designate an individual to serve as SMC. The SMC serves as the link between the SAR system and the NIMS organization and is best placed at the Branch Director or Group Supervisor level. Under the IC's general direction, the SMC coordinates the CISAR response in accordance with the NSP and associated documents.

Note: For further information on SMC, refer to Section 2-7: Search and Rescue Mission Coordinator (SMC).

On Scene Coordinator (OSC)

The OSC coordinates the SAR mission on scene using available resources. The OSC may also serve as a Branch Director or Group Supervisor to manage on scene operations other than SAR, particularly after the CISAR operation is concluded and other missions take precedence, such as search and recovery. OSC duties may include the following:

- Implement the SAR Action Plan;
- Establish and maintain communications with the SMC;
- Operational control and coordination of assigned CISAR aircraft, boats, and response teams;

- Establish and maintain communications with CISAR aircraft, boats, and response teams using assigned on scene channels;
- For arriving CISAR aircraft, boats, and response teams, provide initial briefing and search instructions;
- Provide advisory air traffic service to aid pilots in maintaining aircraft separation;
- Carry out SAR action plans, and modify plans to cope with changing on scene conditions advising the SMC of all major changes;
- Receive and evaluate survivor sighting reports, and divert CISAR responders to investigate sightings;
- Obtain search results from departing CISAR aircraft, boats, and response teams; and
- Submit sequentially numbered situation reports (SITREPs) to the SMC at regular intervals.
- Establishment of a common altimeter setting for all on scene aircraft (this may be done by the ACO or senior pilot if the OSC is a surface unit);
- Require aircraft to make "operations normal" reports to the OSC. It is recommended that:
 - For helicopters: every 15 minutes;
 - For multi-engine fixed-wing aircraft: every 30 minutes.

Note: Operations normal reports may also be instituted for non-aviation SAR aircraft at suitable intervals to monitor status, personnel safety, fatigue, operators with limited training or experience, area hazards, density and diversity of aircraft being used.

Transitioning from CISAR Operations

For some incidents, the CISAR response may be completed or operations suspended by the time the Incident Command is fully operational. As the CISAR operation winds down, the IC may designate the OSC in the SAR response to also serve as a Branch Director or Group Supervisor to manage on scene operations other than SAR. Likewise, CISAR responders may also be reassigned to other groups in the NIMS structure once the CISAR operation is concluded.

CISAR responders should receive sufficient NIMS training to carry out their respective duties within the ICS.

Section 2-7: SAR Mission Coordinator (SMC)

Introduction

Who is SMC?

General Guidelines

SMC Duties

SMC Briefings

References

Introduction

The SMC is that person responsible in the Incident Command for coordinating, directing, and supervising the CISAR operation. The SMC function is normally located in the SAR Branch of the Operations Section.

SMC is an extremely challenging position responsible for coordinating time critical ESF #9 aircraft, boat, and response team SAR operations throughout the affected area. It is the SMC who ensures that Federal, State, Tribal, Territorial, and local SAR assets conduct effective, efficient, and coordinated CISAR operations in a safe manner.

Who is SMC?

Federal Department and Agency CISAR responders normally conduct CISAR operations at the request of the State, Tribe or Territory. As such, the SMC responsible for overall management of CISAR operations is a representative or organization from the respective State, Tribe, or Territory that requested Federal assistance.

Territorial request for assistance, FEMA will designate which agency will function as the ESF #9 Lead Primary Agency. The Lead Primary Agency will then ensure an SMC is appointed to coordinate the on scene SAR response, with all other agencies providing support.

General Guidelines

Lifesaving CISAR operations are time critical, therefore the SMC should be identified early, as well as knowledgeable in SAR response planning and operations.

The SMC should plan for the worst when considering the complexity of CISAR operations, particularly when determining resource requirements. Then as circumstances dictate and more information is obtained, the SMC should adjust and refine resource requirements as required.

Federal CISAR responders will follow their respective agency policies concerning the conduct of CISAR operations. If a SAR resource is unable to conduct a particular SAR mission, another available resource will be used.

CISAR operations can be accomplished both day and night, depending on resource, type

of incident, weather, circumstances, agency specific policies and procedures, etc. However, extreme care must be exercised while conducting nighttime operations.

SMCs should ensure that CISAR responders understand the mission, conduct proper risk assessment, and have an appropriate plan in place to conduct the operation in a safe manner. There is always risk, but knowing and mitigating the risks associated with a particular operation will help maximize the CISAR responder's safety.

SMC Success: CISAR mission planners working together

A critical aspect of SAR planning that helps mitigate the complex coordination of CISAR resources is to have each participating agency support the SMC. Only through a coordinated team effort between the SMC and the participating agencies will CISAR operations be safely managed.

The SMC is responsible for the coordinated CISAR response, but from beginning to end, it must be a team effort with all Federal, State, Tribal, Territorial, and local SAR agencies participating.

Additionally, ESF #9 operations will not happen in a vacuum. The SMC must ensure SAR mission planning is coordinated with other ESFs, as required.

CISAR operations and lifesaving must take precedence. However, logistics, media, medical services, air traffic coordination, and other critical events will also be ongoing. These other events must be considered when conducting CISAR mission planning.

SMC Duties

The following is a list of SMC duties that should be considered during CISAR operations. The list is not all-inclusive; each CISAR operation will have its own unique challenges that will need to be addressed.

Under the direction of the Incident Commander, the SMC should be:

- in charge of the CISAR operation until efforts are terminated or suspended by the Incident Commander;
- familiar with NIMS/ICS and be experienced in coordinating large scale SAR operations;
- well-trained in SAR planning and execution procedures;
- thoroughly familiar with the respective State, Tribal, or Territorial SAR plan;
- responsive to safety or capability concerns raised by CISAR responders (aviation, boat, response teams) and modify SAR mission plans as appropriate; and
- familiar with the geo-referencing matrix (see Section 3-16: Geo-referencing) to ensure effective communication of position information between CISAR responders and the Incident Command.

Additionally, the SMC should:

- Develop Search Action Plans and Rescue Action Plans;
- Dispatch CISAR responders;
- Assign one or more On Scene Coordinators (OSCs) and Aircraft Coordinators (ACOs) as warranted;
- Not hesitate to ask for any additional SAR resources required to accomplish CISAR operations;
- Optimize the use of available CISAR resources and coordinate the provision of necessary supplies and other support equipment;
- Obtain and evaluate all information concerning the CISAR response;
- Re-evaluate any new information and modify the search plan, reassigning CISAR responders as appropriate;

- Assess CISAR operation risk and continue to do so throughout the operation (see Section 2-4: Risk Assessment);
- Remain informed on prevailing environmental conditions;
- Identify each area to be searched, decide on methods and SAR facilities to be used;
- Identify communication frequencies to be used by CISAR responders;
- Ensure effective communications procedures are in place to coordinate CISAR responders;
- Ensure CISAR responders are aware of other ongoing response efforts and can coordinate operations between themselves;
- Arrange for briefing/debriefing of CISAR personnel;
- Evaluate reports from any source and modify SAR plans as necessary;
- Ensure fueling of aircraft is arranged;
- Ensure that aircraft have a proper and safe search altitude;
- Ensure aircraft can coordinate operations amongst themselves for safety of flight and with response team/boat SAR facilities.
- Ensure the care, logistics, and medical support of survivors is arranged;
- Arrange for and coordinate the use of lily pads and places of safety with appropriate authorities;
- Account for all rescued survivors until delivered to a place of safety, and for all passengers and crew if the event is a transportation incident;

- Ensure the IC remains informed of CISAR operations;
- Ensure CISAR mission progress is provided to public affairs personnel; and
- Terminate or suspend search operations if further efforts are unlikely to be successful (see Section 3-12: CISAR-- Conclusion of Operations).

SMC Briefings

The SMC should conduct briefings prior to launching or diverting resources for a particular CISAR mission. CISAR personnel should be given relevant details of the mission and any instructions for mission coordination. The briefing, at a minimum, should discuss the mission objective and all foreseeable hazards that might be encountered by the responding units. Known risks may include, but are not limited to:

- Hazardous weather;
- Poor visibility;
- Hazardous conditions for CISAR responders (aviation, boat, team, etc.); and
- Any problems that may be encountered for a particular mission.

References

The information in this Section was obtained from the following sources:

- *Coast Guard Addendum to the U.S. Search and Rescue Manual to the IAMSAR Manual;*
- *International Aeronautical and Maritime Search and Rescue Manual.*

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Part 3: CISAR Operational Guidance

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Section 3-1: Aircraft Management

Introduction

Air Operations Branch (AOB)

Aircraft Coordinator

Use of Aircraft for CISAR Operations

Aircrew Fatigue

Flight Safety

Introduction

A key element in conducting safe CISAR operations is effective and safe management of aviation resources. The confluence of many helicopters and fixed-wing aircraft conducting multiple sorties in a complex and congested environment increases the risk of mid-air collision. CISAR planners must be able to coordinate CISAR aircraft and ground responders to ensure their effective use and safety of each.

Air Operations Branch (AOB)

NIMS provides for the optional establishment of an AOB. The Operations Section Chief of the Incident/Unified Command may establish an AOB if:

- Warranted by nature of the incident and the availability of air assets;
- The complexity of air operations requires additional support and effort; or
- The incident requires mixing tactical and logistical use of helicopters and other aircraft.

The AOB:

- Oversees all aircraft operations related to the incident, not just operation of CISAR response aircraft;

- Should be staffed with a supervisor, a tactical group, helicopter coordinator, fixed-wing coordinator, and other staff as required;
- Establishes and operates bases for rotary-wing air assets and maintains required liaison with off-incident fixed-wing bases;
- Is responsible for timekeeping of aviation assets assigned to the incident;
- Should coordinate with the FAA Recovery Desk (FRD) to ensure compliance with any airspace restrictions prior to entering the controlled airspace; and
- Obtain from the FRD discrete beacon codes for those aircraft requesting to fly into the controlled airspace.

Aircraft Coordinator

In addition to the AOB, the SMC may assign an Aircraft Coordinator (ACO) to help maintain safe and effective use of response aircraft.

An ACO:

- Is the person, team, or facility that will coordinate multiple aircraft in CISAR

operations in support of the SMC or OSC;

- Is a supporting and advisory service;
- Must be familiar with planning and conducting search operations using several aircraft at once;
- Will normally be performed by the facility with the most suitable mix of communications, radar, and plotting capability combined with trained personnel to effectively coordinate the involvement of multiple aircraft in CISAR operations while maintaining flight safety; and
- Should perform aircraft coordination duties at the most effective location (e.g., Incident Command, EOC, a fixed-wing aircraft, ship, etc.).

Normally, the ACO would be located with the SMC in the SAR Branch of the Operations Section, but may work in the Air Support Branch if one is established. The ACO's focus is on CISAR response aircraft. Obviously, ACO duties will have to be closely coordinated with the AOB if one is established.

Depending on needs and qualifications, the ACO may be assigned duties that include the following:

- Coordinate the airborne resources in a defined geographical area;
- Maintain flight safety – issue flight information;
- Ensure flow planning (e.g., aircraft point of entry and point of exit);
- Prioritize and allocate tasks;
- Coordinate the coverage of assigned search areas;
- Ensure aircraft communications are maintained; and

- Make consolidated situation reports (SITREPs) to the SMC and OSC, as appropriate.

Aircraft Separation

For missions with multiple CISAR response aircraft involving systematic searches of several assigned search areas, all Commence Search Points (CSPs) and search pattern orientations should be coordinated to ensure that all aircraft on scene during the same time periods maintain appropriate separation.

Use of Aircraft for CISAR Operations

Lifesaving has priority over all other aircraft missions. With this in mind, delivery of vital supplies (e.g., water, medical supplies) may also become an additional priority.

CISAR response aircraft can quickly search large areas, intercept and escort aircraft or other CISAR response units, and perform aerial delivery of supplies, equipment, and personnel.

The aircraft pilot will always make the final determination as to whether the aircraft can perform the assigned mission.

The SMC/OSC/ACO should be aware of the specifications of the aircraft being used during CISAR operations in order to make informed decisions when allocating CISAR aircraft resources.

CISAR aircraft pilots should carefully evaluate the SAR action plan to ensure pattern orientation for the assigned search area and those for adjacent assignments meet safety requirements and provide the best opportunity for detecting the search object. The SMC must be notified immediately upon discovery of any safety issues and should be notified of all other apparent deficiencies as early as practicable.

When planning aircraft search areas, consider the following:

- Orientation of aircraft search patterns and CSP placement is based on thorough consideration of all factors, including safety, aircraft endurance, navigation, environmental conditions, and available resources.
- If a systematic search of a particular area is conducted, the aircraft's CSP should be placed close to the point of the aircraft's departure location to facilitate the start of the search effort;

Note: A different CSP may be designated to take into account factors such as the aircraft's next destination, mission, fuel replenishment location, etc.

- When planning an aircraft search pattern, consider the location of the sun, especially early and late in the day. Looking into the sun makes detection of people in distress more difficult.

Risk Management

The Incident Command, SMC, ACO, OSC and aircraft commanders continuously make operational decisions during CISAR operations. As missions progress, each must weigh and continually reassess the urgency of the mission and the benefits to be gained versus the risks involved. The safety of the aircrew and aircraft must always be one of the primary considerations for planning and conducting aviation missions.

For CISAR operations, potential risks to the aircraft and crew should be weighed against risks to the personnel and/or property in distress if the mission is not undertaken. Probable loss of the aircrew is not an acceptable risk.

Aircrew Fatigue

Physical factors impact the ability of flight crews to exercise good judgment. Chief among those factors is fatigue.

Stressors such as constant vibration, loud noises from machinery and radios, illness, poor physical conditioning, improper diet,

and irregular or insufficient sleep patterns can create both acute and chronic fatigue.

Most aviation units and organizations have developed crew standards that protect personnel while maximizing support the CISAR operation. Agency specific fatigue standards must be adhered to.

Flight Safety

Flight safety is of paramount concern in complex CISAR operations and must be considered in mission planning.

Effective aviation safety is an attitude, not an add-on. For aviation safety to be truly effective, safety must be a pervasive notion supported at all levels of the Incident Command.

Most aviation mishaps are preventable and usually the result of human error, mechanical failure, or combination of both. Most mechanical failures may be attributed to a human error at some point, either in the design, maintenance, or operation of equipment.

If mishaps are to be prevented, it is necessary to detect and guard against human error at every stage of an air operation. This requires a continuous review and communication between all activities affecting aviation operations and maintenance so that mistakes or potential mistakes can be identified, evaluated, and corrected.

During CISAR operations, where hazards to aircraft safety can and will occur, these hazards must be identified and effectively reduced or eliminated, to minimize the potential for a mishap and ensuring the aircraft's continued operational availability.

Each individual connected with air operations, whether in an operational or supporting role (e.g., aircrew, scheduling, maintenance), contributes directly to the effectiveness of aviation safety. Effective

safety is a team effort and requires the active participation of “all hands.”

Helicopters

For planning purposes, helicopters are generally excellent rescue platforms capable of recovering persons from a wide variety of distress situations on land and water.

Helicopters involved in CISAR operations should generally have some or all of the following capabilities:

- Hover;
- Hoisting/winch;
- Insertion and extraction;
- Delivery of equipment;
- Confined area landing;
- Direction finding;
- Night illumination; and
- Search sensors.

Section 3-2: Airspace Temporary Flight Restrictions (TFRs)

Definitions and Types

Requests and Issuance

TFR Proportions

Definition and Types

A Temporary Flight Restriction (TFR) is an airspace prohibition implemented on a temporary basis, in order to provide protection for persons or property in the air or on the ground.

The Code of Federal Regulations, Title 14 (14 CFR) identifies TFRs for a variety of situations, including disaster response which is covered in 14 CFR 91.137.

14 CFR 91.137 TFRs may be issued to:

- Protect persons and property on the surface or in the air from a hazard associated with an incident on the surface (14 CFR 91.137 (a) (1));
- Provide a safe environment for the operation of disaster relief aircraft (14 CFR 91.137 (a) (2)); or to
- Prevent an unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest (91.137 (a) (3)).

Note: Properly accredited news representatives are allowed into 91.137 (a) (2) and 91.137 (a) (3) TFRs if they file a flight plan.

The second type of TFR that could be issued for a catastrophic incident or national security event is provided for in 14 CFR 99.7, Special Security Instructions. The Federal Aviation Administration (FAA), in

consultation with DoD or federal security and intelligence agencies, may issue special security instructions to address situations determined to be detrimental to the interests of national defense.

For example:

- During the response to Hurricane Katrina, a 14 CFR 99.7 TFR was implemented for helicopter refueling tracks and to coordinate aviation operations in the Gulf area.
- When the President visited New Orleans and toured the Gulf Coast, a 14 CFR 91.141 TFR was implemented;

For CISAR operations, a 14 CFR 91.137 TFR will normally be used.

Requests and Issuance

While only the FAA may issue a TFR, the following entities may request one:

- Military commands;
- Federal security and intelligence agencies; regional directors of the Office of Emergency Planning;
- State civil defense directors;
- Authorities directing or coordinating organized relief or response air operations (e.g. Office of Emergency Planning, law enforcement agencies; U.S. Forest Service, and State aeronautical agencies);

- State Governors;
- FAA Flight Standards District Offices; and
- Aviation and sporting event officials.

Non-FAA authorities should contact the nearest air traffic control facility to request a TFR (If possible, have the location latitude/longitude in degrees/minutes/seconds format.)

FAA authorities should contact their respective service area representative for non-emergency requests, the cognizant air route traffic control center for emergency requests and the System Operations Support Center (SOSC) for VIP or security TFRs.

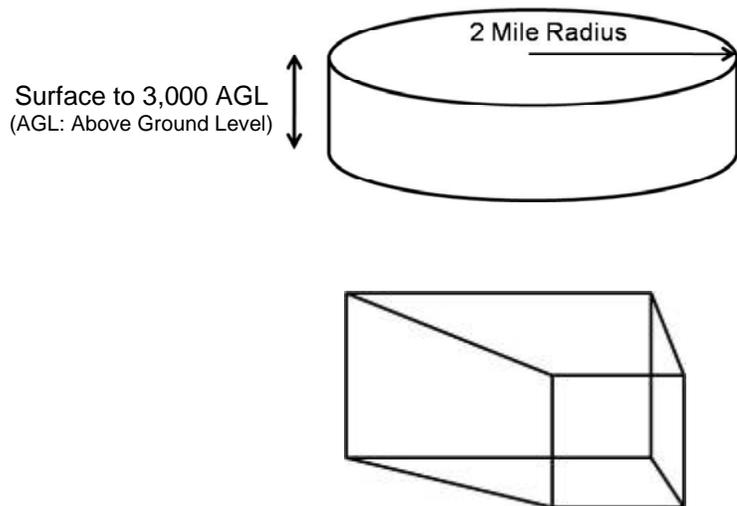
Note: TFR information or assistance can be obtained from the SOSC by calling 202-267-

8276; for any other security related question or concerns relating to aviation contact the Domestic Events Network (DEN) at 866-598-9522.

TFR Proportions

TFRs can be issued as a cylinder based on a point, a polygon or other shapes. Latitude and longitude, and/or a fixed radial distance from a navigational aid identify the point or corners of the TFR. A TFR always includes a range of altitudes. Rules are enforced about who can enter or leave a TFR and what can be done within the TFR airspace.

TFRs are sized to minimize disruption of surrounding airspace while meeting the needs of the requestor.



Section 3-3: Animals

General Guidance

Service and Companion Animals

Livestock, Wildlife and Captive Animals

Practical Considerations

Animal Response Teams

General Guidance

Animal Rescue

No animal rescue activities should be attempted by CISAR responders on scene when, in their judgment, such activities would risk the lives or safety of themselves or others, or possibly create critical delays in rescuing persons in distress. Otherwise, animals should be rescued or assisted as practicable.

Any attempt to capture animals can be potentially dangerous. Always use caution when approaching animals. Some animals may bite or show aggression even if not provoked. It is best if trained disaster personnel experienced in animal behavior attempt to rescue animals. Therefore, it is prudent to develop a current list of qualified animal rescuers who can assist CISAR responders.

State, Tribal, Territorial, and local plans should provide for handling and care of rescued animals. For example, local animal

control officials may be able to provide trained and equipped personnel to assist with animal control and rescue, including aggressive and difficult-to-access animals and unusual or exotic pets such as snakes.

Ultimately, the person in charge of the CISAR aircraft, boat, or response team should make the final decision concerning the rescue of animals.

Animal Transportation Risks

Great care must be exercised in transporting animals in a CISAR operation.

Transport of animals by CISAR responder aircraft, boats, and response teams can pose a problem, depending upon the size, health, and temperament of the animal(s).

CISAR responders should not be placed at increased risk to rescue animals.

Animals in Table 3-3-1 below may be encountered during CISAR operations:

Table 3-3-1: Animal Categories

Animal Type	Definition
Companion Animals	Household Pet: A domesticated animal, such as a dog, cat, bird, rabbit, rodent, or turtle that is traditionally kept in the home for pleasure rather than for commercial purposes, can travel in commercial carriers, and be housed in temporary facilities. Household pets do not include reptiles (except turtles), amphibians, fish, insects/arachnids, farm animals (including horses), and animals kept for racing purposes.
Service/Assistance Animals	Any guide dog, signal dog, or other animal individually trained to provide assistance to an individual with a disability including, but not limited to, guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair, or fetching dropped items.
Livestock and Farm Animals	Mainly provide food for human or animal consumption.
Wildlife	Wildlife primarily lives independent of human control and rely on individual ability to obtain food or water.
Captive Animals	Captive animals live in zoos or aquariums and that might otherwise be endangered wild animals, and in research facilities, and which are totally dependent on humans for survival.
<p><i>References:</i></p> <p>¹ Disaster Assistance Policy DAP9523.19: Eligible Costs Related to Pet Evacuations and Sheltering (24 Oct 2007)</p> <p>² Department of Justice, Americans with Disabilities Act (ADA), 42 USC 1201 et seq, implementing regulations at 28 CFR 36.104</p>	

Service and Companion Animals

Ideally, service or companion animals should be rescued along with their owners, with priority given to service animals that are essentially an extension of a disabled person. Rescue of service animals can mean the difference between a person who requires assistance from shelter staff and a person who can function independently.

Safety of human life is always the first consideration even when there is a service animal involved. If the only choice is between transporting a service animal with an individual who has a disability or rescuing the disabled individual and another person, the human always has first priority. Ideally, the service animal can be retrieved later and reunited with its owner.

If service or companion animals cannot be rescued along with their owners, CISAR responders should provide information on the animals and their location for subsequent recovery by animal rescue services and rejoined with their owners.

Identifying Service Animals. Some, but not all service animals wear special collars and harnesses. Some of these animals are licensed or certified and have identification papers. However, availability of relevant documentation should not be a condition of providing SAR services. The person with the animal should be asked whether the animal is required because of a disability.

Regardless of the animal's category, any animal should be left behind that poses a direct threat to the health or safety of people or the transport vehicle, such as when the

animal is actually exhibiting anxiety or potentially vicious behavior.

Livestock, Wildlife, and Captive Animals

There are many situations where livestock, wildlife, or captive animals might be encountered during CISAR operations. For example, animals that are an apparent threat to human safety should be reported and avoided, or be confined, sedated, or killed if necessary. Sound judgment must be exercised in dealing with such animals.

Livestock or confined animals might be able to avoid threats such as fire or flooding if they were free. The simplest solution may be to release these types of animals for capture later. CISAR responders should seek advice from the Incident Command as required.

Practical Considerations

The following are some practical considerations CISAR responders can take when animals are encountered:

- Possible warning signs that an animal is about to attack may include tail high and stiff, ears up, hair on back standing up, barking, and showing teeth. Even the friendliest dog can bite or attack when in fear and/or in pain;
- For non-aggressive animals, use an approved muzzle, slip collar, leash and/or food lures;
- For aggressive, unpredictable animals, use snare poles, restraints, and humane traps; use sedation when appropriate;
- To help avoid animal bites, remain as still as possible, avoid direct eye contact, and put something between you and the aggressive animal such as a trash can lid;
- If you fall and an animal attacks, protect your head, curl into a ball with your hands over your ears, and remain motionless;

- If attacked or bitten by a dog, use repellent, wash wounds immediately with soap, seek immediate medical help, and secure and observe offending dog, if practicable;
- Capture animals using humane live traps, catch poles, leashes, cages and appropriate strength ropes; and
- Use appropriate bite-resistant gloves, and maintain a properly equipped first-aid kit.

Animal Response Teams

The Humane Society of the United States (HSUS) is a good resource of information about organizations that can assist with animal rescue and care needs.

The HSUS maintains National Disaster Animal Response Teams (NDART) that provide assistance during catastrophic incidents. These teams:

- Serve as a resource for individuals, animal-related organizations, government agencies, and others concerned about the urgent needs of animals before, during, and after disasters; and
- Assist with animal rescue, handling, and transport.

Section 3-4: Boat Operations Management

Introduction

Boat Operations Branch (BOB)

Health and Safety

Boat Operations

Boat Crews

CISAR Boat Preparation

Points to Consider in Flooding Scenarios

Introduction

Boat operations are a vital part of CISAR operations. Responses from the water presents unique challenges and major safety concerns for boat crews. CISAR boat operations are usually required for flooding incidents or large passenger ship disasters. Boat crews must be familiar with best practices and lessons learned from past incidents to ensure safe and effective boat operations.

Boat Operations Branch (BOB)

NIMS outlines the optional establishment of a Boat Operations Branch (BOB). The Operations Section Chief of the Incident/Unified Command may establish a BOB as warranted by the nature of the incident and availability of assets and personnel.

The BOB would oversee boat operations related to the overall incident, not just CISAR operations.

Health and Safety

CISAR responders on the water face serious health concerns. Awareness and preparation can help to avoid serious injury or illness.

As the response progresses, keep in mind the following:

- In the event of a flood, sewage and waste flow freely into the waterways exposing boat crews to possible disease and contamination;
- Boat crews must be cognizant of unsanitary vessel spray and water splash. Boat crewmembers must be dressed in appropriate protective equipment and remain aware of these concerns when maneuvering or choosing a safe operating speed. Special consideration should be taken when operating airboats in an unsanitary environment;
- For missions where contaminants or waste are known, crews should be made aware of associated or prevalent diseases and be able to recognize symptoms;
- Responding to incidents that involve victims who have been exposed to hazardous materials, boat crews should be properly protected and exercise their duties with caution.
- To help boat crews avoid heat exhaustion, dehydration, and exhaustion,

boats should be stocked with plenty of fresh water and food;

- Because boats may operate in difficult environments for extended periods of time, a duty rotation should be implemented to ensure crews do not become overly fatigued;
- Response personnel should be aware that deceased persons may pose potential health risks; and

Boat Crew Decontamination

In flooding scenarios, boat crews will inevitably get wet despite precautions. Decontamination of personnel and equipment is essential for the CISAR responder's health and safety. Showers, change of clothes/boots, bleach, sanitized wipes, laundry, etc., will be essential to ensure personnel and equipment are decontaminated at the end of each mission.

If boats are deployed via trailers from a base camp, CISAR responders should set up a decontamination area away from living quarters to ensure other responders are not contaminated.

(Note: Freshwater wash down may be limited due to contaminated local water.)

Boat Operations

In certain situations, such as flooding or extreme weather conditions, the altered environment will present unique challenges:

- Flooding can adversely impact land transportation by destroying roads and bridges thus hindering the response;
- Local infrastructure may be unable to support CISAR responders (e.g. housing, food);
- Launch ramps may be unusable;
- Large areas of land covered in water during a flood can become uncharted waterways in which crews will be required to operate. The water could

potentially conceal numerous hazards, such as; cars, trees, signposts, etc;

- Waterway aids to navigation may be moved off location or damaged, becoming useless or dangerous to CISAR responders and the boating public if the off station condition is not recognized;
- Obstacles under water and large floating debris may damage boat propellers, jet drives, and hulls;
- Operating boundaries will need to be set or adjusted for increased and uncharted waterways after a flood to ensure full coverage;
- Boat crews should have extra fuel, knowledge of the nearest operating fueling station or a plan for fuel delivery if local fueling locations are damaged or unusable; and
- Searching for survivors should be conducted as per Section 3-11: CISAR Searches and Section 3-23: Structure Marking Systems Sections.

Because of these challenges, keeping a good lookout and monitoring boat speed will help keep crews safe and boats free from damage.

Boat Crews

Leadership and the need for decisive action are a necessity in the event of a CISAR response. Boat crews need clearly defined roles, responsibilities, and lines of authority.

Responders can be called on to conduct operations where immediate decisions will be required to save lives and accomplish the mission. Boat operators and boat crews need to be made aware of their scope of authority in order to effectively act with limited guidance from the Incident Command. Enabling boat operators to act quickly and decisively will reduce the reliance on

communications systems that may sometimes fail.

In all boat operations, the final decision authority for the safety of the mission rests with the boat's operator (Coxswain). If the Coxswain believes an evolution is unsafe or would cause undue harm to the crew, then they should have the authority to cease operations. Risk evaluation is a healthy and necessary part of every mission. If the risk outweighs the probable benefit, a mission should be reevaluated.

CISAR Boat Preparation

Situations cannot be predicted which is why training and maintenance are so vital to preparing for CISAR boat operations. Boat crews must train and remain ready to respond.

Likewise, the maintenance of resources is equally important. Daily boat checks and regularly scheduled maintenance must be performed to ensure boats are ready to respond in the event of a catastrophe.

Points to Consider in Flooding Scenarios

The following points are provided for consideration when using boats in CISAR flooding scenarios:

- Flat bottom jon boats may be more effective than Rigid Hull Inflatable Boats (RHIBs) or other types of inflatable boat due to chain link fences, barbed wire, and other debris that can cause damage to inflatable cells;
- Air boats can be effective in a flood scenario, but use caution: air boats can spray toxic water into the air and be ingested by SAR responders and flood victims;
- Poles, oars and paddles will be necessary; motors and props take a beating on debris and unseen obstacles;
- Bring extra boat propellers (propellers can be damaged by debris);
- Personal Flotation Devices (PFDs) are required for every boat and should be worn by all rescue personnel; consideration should be given to providing PFDs to those being rescued. (include extra large and small size PFDs)
- Consider carrying a lightweight ladder for extricating persons from roof tops, waders, chain saws and dead man sticks to lift power lines;
- Every boat should be equipped with at least a first aid kit (a better equipped medical kit is preferred);
- Ideally, every boat crew should have an Emergency Medical Technician (EMT);
- In flooding scenarios, animals and insects may pose additional challenges to boat crews;
- Boats should be equipped with sturdy, water resistant radios or use radio bags to limit damage due to submersion;
- Boats should be equipped with lights and chemical sticks;
- Boat managers should implement routine boat reporting requirements to ensure boat crew safety while deployed;
- Consider using boats that do not require trailers (trucks with trailers are difficult to maneuver in debris laden areas);
- Responders should be current on all vaccines and if necessary, be provided broad-spectrum antibiotics to combat the effects of contaminated water;
- Boat crews should have a minimum of three days food and supplies (anticipate limited logistical support for the first 72 hours; and

- Logistical support (e.g., berthing, laundry, portable toilets, portable shower trailers, fuel trucks, communications equipment, etc.) must be implemented as soon as possible to ensure the long term success of any CISAR operation.

Section 3-5: Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (CBRNE) Incidents--Introduction

Overview

Terrorism

Specialized CBRNE Response Teams

Weapons of Mass Destruction-Civil Support Teams (WMD-CSTs)

CBRNE Enhanced Response Force Packages (CERFPs)

CBRNE Consequence Management Response Force (CCMRF)

Overview

CISAR operations may be conducted within the context and environment associated with a CBRNE incident, which may have been caused either by accident or act of terrorism. In such situations, CISAR responders should:

- Be concerned with personnel safety;
- Understand and be aware of impacts on SAR capabilities;
- Be aware of the impact these types of situations have on government and public behavior; and
- Understand and adhere to instructions from experts and authorities in charge.

Sections 3-6 through 3-10 provide additional information relevant to CBRNE threats to CISAR responders.

Terrorism

DHS defines terrorism as the use of force or violence against persons or property in violation of the criminal laws of the United States, for purposes of intimidation, coercion, or ransom. Terrorists may use chemical, biological, nuclear, and

radiological weapons. Terrorists often use threats to:

- Create fear among the public;
- Try to convince citizens that their government is powerless to prevent terrorism; and
- Get immediate publicity for their causes.

High-risk terrorism targets include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail.

Specialized CBRNE Response Teams

Relevant emergency plans should identify available specialized teams that can be used to assist with CISAR operations within a CBRNE environment.

Many Federal, State, Tribal, Territorial, and local agencies and organizations have such

teams; however, their immediate availability varies.

A primary resource available to assist in a CBRNE incident is the National Guard, which can mobilize two types of special response teams:

- Weapons of Mass Destruction (WMD) Civil Support Teams (CSTs); and
- CBRNE Enhanced Response Force Packages (CERFP).

In addition, DoD maintains the CBRNE Consequence Management Response Force (CCMRF). CCMRF can provide personnel and capabilities to support civil authorities for extremely hazardous CBRNE incidents.

An overview of the National Guard and DoD's CBRNE incident response assets are provided below.

Weapons of Mass Destruction-Civil Support Teams (WMD-CSTs)

WMD-CSTs provide support to Federal, State, Tribal, Territorial, and local emergency response organizations within the United States, Territories, and Possessions when a CBRNE incident occurs. These specialized teams are designed to assist civil authorities, regardless of whether the CBRNE incident is intentional or unintentional, and the resulting natural or man-made disaster.

WMD-CST operations are conducted primarily in civil environments (urban, rural, industrial, or suburban areas) and in hot or cold weather.

WMD-CSTs are made up of 22 full-time National Guard members and consist of six sections: command, operations, communications, administration/logistics, medical, and survey, who have been specially trained and equipped to provide a technical reach-back capability to other experts.

CSTs perform the following:

- Identify and assess suspected CBRNE agents/substances and current/projected consequences;
- Advise civilian responders on appropriate response measures and actions through on-site testing and expert consultation;
- Facilitate the arrival of additional State and Federal military forces by assisting with appropriate requests for additional support;
- Provide rapid detection and analysis of chemical, biological, and radiological hazards agents at a WMD incident scene; and
- Provide advice on event mitigation, medical treatment, follow-on resources, and other response concerns to the IC.

WMD-CSTs are designed to be initial response assets of the State. Requests for their assistance must be processed in accordance with relevant plans of the State concerned.

CBRNE Enhanced Response Force Packages (CERFPs)

CERFPs are specialized National Guard teams comprised of the following four elements:

- *Command and Control Element:* directs and deploys the overall activity of the CERFP; reports to the JTF-State and IC;
- *Search and Extraction Element:* conducts casualty SAR at incident sites, extracts victims, lifts and moves debris and heavy items using ropes, chains, wires or cranes (rigging), and uses equipment designed to support the sides of an excavation and prevent cave-ins (shoring);

- *Decontamination Team*: conducts site selection, establishes log-in/log-out procedures, clothing removal, and ambulatory/non-ambulatory decontamination; and
- *Medical Element*: performs medical triage and initial treatment and provides emergency medical treatment, medical transport, stages for military and civilian evacuation, medical support to patient decontamination, and search and extraction.

CBRNE Consequence Management Response Force (CCMRF)

For the most hazardous CBRNE incidents, DoD maintains CCMRF (pronounced “sea-smurf”). Each CCMRF will provide the capabilities most often called for in a CBRNE response, including airlift, medical, logistics, and units specializing in biological or radiological identification and clean-up.

CCMRFs are intended to provide “a flexible force” that can provide capabilities fully scalable to support a particular CBRNE event.

Section 3-6: CBRNE--Chemical Incidents

Nature of Chemical Incidents

Indicators of Chemical Agents

Chemical Incident Symptoms

Chemical Incident Decontamination

CISAR Response to a Chemical Incident

Contacts

Specialized Response

References

Nature of Chemical Incidents

Chemical agents are poisonous vapors, aerosols, liquids, and solids that have toxic effects on people, animals, or plants. Chemical agents can be:

- Released by industrial or transportation accident;
- Released by bombs or sprayed from aircraft, boats, and vehicles;
- Used as a liquid to create a hazard to people and the environment; and
- Odorless, tasteless, and have an immediate (within a few seconds or minutes) or a delayed (2 to 48 hours) effect.

While potentially lethal, chemical agents are difficult to deliver in lethal concentrations. Outdoors, chemical agents often dissipate rapidly. Chemical agents also are difficult to produce, transport, and deliver.

Indicators of Chemical Agents

Table 3-6-1 below identifies possible indicators of chemical agents:

Table 3-6-1: Possible Indicators of Chemical Agents:
Unexplained dead or dying animals or lack of insects.
Unexplained casualties: multiple victims, serious illness, nausea, disorientation, breathing difficulty, convulsions, or other chemical-indicative casualty patterns.
Unusual liquid, spray or vapor, droplets, oily film; unexplained odor, low flying clouds, or fog unrelated to weather.
Suspicious devices or packages, unusual metal debris; abandoned spray devices or unexplained munitions.

Chemical Incident Symptoms

A chemical attack could come without warning. Onset of symptoms could become present in seconds, hours, or even days. Signs of a chemical release include people having difficulty breathing, experiencing eye irritation, losing coordination, becoming nauseated, or having a burning sensation in the nose, throat, and lungs. This may also include burning, itching, red skin, prominent

tearing/burning/redness of eyes, eyelid edema, shortness of breath, nausea and vomiting, cough, chest tightness, or sore throat.

Chemical Incident Decontamination

Decontamination is required within minutes of exposure to minimize health consequences, or as soon as possible. Do not leave the safety of a shelter to go outdoors to help others until authorities announce it is safe to do so.

Chemical exposure requires immediate professional medical attention. If medical help is not immediately available, decontaminate yourself and assist in decontaminating others by using the following procedures.

Chemical Incident Decontamination Procedures

Using extreme caution, remove all clothing and other items in contact with the body.

(Note: Contaminated clothing normally removed over the head should be cut off to avoid contact with the eyes, nose and mouth.)

Put contaminated clothing and items into a plastic bag and seal it. Decontaminate hands using soap and water. Remove eyeglasses or contact lenses. Put glasses in a pan of household bleach to decontaminate, and then rinse and dry.

Flush eyes with water.

Gently wash face and hair with soap and water before thoroughly rinsing with water.

Decontaminate other body areas likely to have been contaminated with a cloth soaked in soapy water and rinse with clear water.

Change into uncontaminated clothes (clothing stored in drawers or closets is likely to be uncontaminated).

Proceed to a medical facility for screening and professional treatment.

Clothing disposal

After washing yourself, place your clothing inside a plastic bag. Avoid touching contaminated areas of the clothing. If you cannot avoid touching contaminated areas, or you are not sure where the contaminated areas are, wear rubber gloves or put the clothing in the bag using tongs, tool handles, sticks, or similar objects. Anything that touches the contaminated clothing should also be placed in the bag. If you wear contacts, put them in the plastic bag as well.

Seal the bag, and then seal the bag inside another plastic bag. Disposing of your clothing in this way will help protect you and other people from any chemicals that might be on your clothes.

CISAR Response to a Chemical Incident

The first concern must be to recognize a chemical event and protect the CISAR responders. Unless CISAR responders recognize the danger, they will very possibly become casualties in a chemical environment. It may not be possible to determine from the symptoms experienced by affected personnel which chemical agent has been used. Chemical agents may be

combined and therefore recognition of agents involved becomes more difficult.

When there is reason to believe that chemical agents may be present, the following should be considered:

- Approach scene cautiously from upwind. Resist the urge to rush in and assist victims. Others cannot be helped until the situation has been fully assessed;
- Secure the scene. Without entering the hazard area, isolate the likely or suspected area and assure the safety of people and the environment. Keep people away from the scene and outside the safety perimeter;
- Identify the hazards (evaluate all available information);
- Assess the situation, considering the following:
 - Is there a fire, spill, or leak?
 - What are the weather conditions?
 - What is the terrain like?
 - Who/what is at risk: people, property, or the environment?
 - What actions should be taken? Is an evacuation or shelter in place necessary?
 - What resources (human and equipment) are required and are readily available?
 - What can be done immediately?
- Obtain help (Notify local EMS/911; notify responsible agencies for assistance from qualified personnel);
- Decide on site entry (Any efforts made to rescue persons or to protect property or the environment must be weighed against the possibility that you could become endangered);

- Alert fellow responders to the scene's safest entry route;
- Establish a command post and lines of communication;
- Rescue casualties where possible and evacuate if necessary;
- Maintain control of the site;
- Continually reassess the situation and modify the response accordingly;
- The first duty is to consider the safety of the people in the immediate area, including your own;
- Do not walk into or touch spilled material;
- Avoid inhalation of fumes, smoke and vapors, even if no Weapons of Mass Destruction are known to be involved; and
- Do not assume the gases or vapors are harmless because of a lack of smell – odorless gases or vapors may be harmful.

Contacts

- 911/dispatch to alert police/bomb squad and fire/HazMat;
- Chemtrec, a service of the Chemical Manufacturers Association, can be reached as follows: call CHEMTREC (24 hours) 800-424-9300; 703-527-3997 (For call originating elsewhere; collect calls are accepted);
- Chem-Tel, Inc, an emergency response communication service, can be reached as follows: call Chem-Tel, Inc (24 hours) 800-255-3924; 813-979-0626 (For calls originating elsewhere; collect calls are accepted),
- National Response Center (NRC) – operated by the U.S. Coast Guard, receives reports required when

dangerous goods and hazardous substances are spilled. After receiving notification of an incident, the NRC will immediately notify the appropriate Federal On Scene Coordinator and concerned Federal agencies. Call NRC (24 hours) 800-424-8802;

- Military shipments: for assistance in incidents involving materials being shipped by, for, or to DoD, call one of the following 24 hour numbers:
 - U.S. Army Operations Center, for incidents involving explosives and ammunition. 703-697-0218 (call collect); or
 - Defense Logistics Agency, for incidents involving dangerous goods other than explosives and ammunition. 800-851-8061

References

The information in this Section was obtained from the following sources:

- FEMA. “Are You Ready?” *Guidance on Biological Threats*. Available online at http://www.fema.gov/areyouready/biological_threats; (Updated: 23 March 2006).
- Department of Homeland Security. *WMD Response Guidebook (LSU)*, (2006) Version 3.3.

Section 3-7: CBRNE--Biological Incidents

Introduction

Overview

Delivery Methods

Indicators of Biological Agents

What to Do

CIS Responder Concerns

References

Introduction

Biological weapons in the possession of hostile nations or terrorists pose unique and grave threats to the safety and security of the United States and our allies.

Biological weapons attacks:

- Can cause catastrophic harm by inflicting widespread injury and massive casualties;
- Cause severe economic disruption;
- Can mimic naturally occurring disease, potentially delaying recognition of an attack and creating uncertainty about whether one has even occurred;
- Can be mounted either inside or outside the United States; and
- Because some biological weapons agents are contagious, the effects of an initial attack could spread over a wide geographical region.

Disease outbreaks, whether natural or deliberate, respect no geographic or political borders. Once a biological weapons attack is detected, the speed and coordination of the Federal, State, Tribal, Territorial, and local response will be critical in mitigating the

attack's lethal, medical, psychological, and economic consequences. Responses to biological weapons attacks depend on pre-attack planning and preparedness, capabilities to treat casualties, risk communications, physical control measures, medical countermeasures, and decontamination capabilities.

Following a biological weapons attack, all necessary means must be rapidly brought to bear to prevent loss of life, illness, psychological trauma, and to contain the spread of potentially contagious diseases. Provision of timely preventive treatments such as antibiotics or vaccines saves lives, protects scarce medical capabilities, preserves social order, and is cost effective.

Overview

Biological agents are organisms or toxins that can kill or incapacitate people, livestock, and crops. The three basic groups of biological agents that would likely be used as weapons are bacteria, viruses, and toxins. Most biological agents are difficult to grow and maintain. Many break down quickly when exposed to sunlight and other environmental factors, while others, such as anthrax spores, are long lived.

Delivery Methods

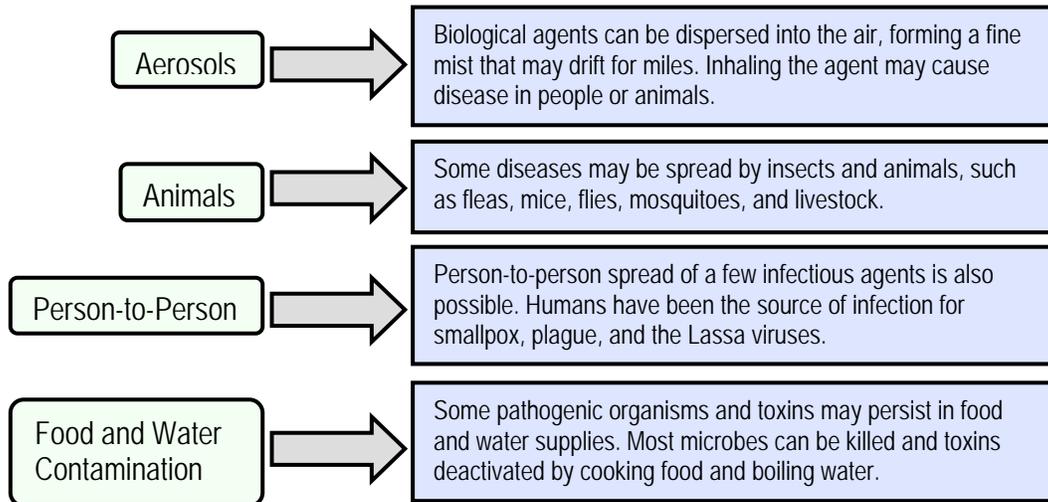
Disease transmission may occur from:

- Direct contact with an infected individual or animal;
- An environmental reservoir (includes contaminated surface or atmospheric dispersion);
- An insect vector; or

- Contaminated food and water.

Indirect contact transmission may also occur where contaminated inanimate objects (fomites) serve as the vehicle for transmission of the agent.

Specific delivery methods include the following:



Indicators of Biological Agents

As detailed in the *Biological Incident Annex*, Detection of a bioterrorism act against the civilian population may occur in several different ways and involve several different modalities:

- An attack may be surreptitious, in which case the first evidence of dissemination of an agent may be the presentation of disease in humans or animals. This could manifest either in clinical case reports to domestic or international public health authorities or in unusual patterns of symptoms or encounters within domestic or international health surveillance systems.

- A terrorist-induced infectious disease outbreak initially may be indistinguishable from a naturally occurring outbreak; moreover, depending upon the particular agent and associated symptoms, several days could pass before public health and medical authorities even suspect that terrorism may be the cause. In such a case, criminal intent may not be apparent until some time after illnesses are recognized.

Table 3-7-1 on the next page lists indicators that may signify the presence of biological agents:

Table 3-7-1: Possible Indicators of Biological Agents

Unexplained dead or dying animals (sick or dying animals, people, or fish).
Unexplained casualties (unusual illness for region/area; definite pattern inconsistent with natural disease).
Unusual swarms of insects.
Suspicious bombing incident with little blast or fire damage.
Abandoned spray or dispersion devices.
Laboratory containers.
Biohazard cultures or culture media labels.
Casualty distribution aligned with wind direction.

What to Do

In some situations (e.g., Anthrax letters sent in 2001), government authorities may be alerted to potential exposure. If this is the case, pay close attention to all official warnings and instructions on how to proceed. The delivery of medical services for a biological event may be handled differently to respond to increased demand. The basic public health procedures and medical protocols for handling exposure to biological agents are the same as for any infectious disease. It is important to pay attention to official instructions via radio, television, and emergency alert systems.

CISAR Responder Concerns

The most practical method of initiating widespread infection using biological agents is through aerosolization, where fine particles are sprayed over or upwind of a target where the particles may be inhaled. An aerosol may be effective for some time after delivery, since it will be deposited on clothing, equipment, and soil. When the clothing is used later, or dust is stirred up, responding personnel may be subject to “secondary” contamination.

CISAR responders must be protected from the hazard prior to rescuing victims.

Planning for the response to bioterrorist acts must include provisioning CISAR responders with the appropriate PPE because biological agents may be able to use portals of entry into the body other than the respiratory tract. Individuals may be infected by ingestion of contaminated food and water, or even by direct contact with the skin or mucous membranes through abraded or broken skin. Therefore, it is critical for CISAR responders to use appropriate protective clothing or commercially available Level C clothing and to protect the respiratory tract through the use of a mask with biological high-efficiency particulate air (HEPA) filters.

Exposure to biological agents, as noted above, may not be immediately apparent. Casualties may occur minutes, hours, days, or weeks after an exposure has occurred. The time required before signs and symptoms are observed is dependent on the agent used. Symptoms may include: fever, chills, headaches, muscular pain, fatigue, non-productive cough, profuse sweating, chills chest/muscle/joint pain, cramping, abdominal pain, and watery diarrhea (may be somewhat bloody). Even though the above symptoms may become evident, often the first confirmation will come from blood

tests or other diagnostic means used by medical personnel.

References

The information in this Section was obtained from the following sources:

- Department of Homeland Security, *Homeland Security Presidential Directive 10: Biodefense for the 21st Century* (April 28, 2004); available online at http://www.nimsonline.com/presidential_directives/hspd_10.htm.
- FEMA, *Biological Incident Annex* (August, 2008); available online at http://www.fema.gov/pdf/emergency/nrf/nrf_BiologicalIncidentAnnex.pdf.
- FEMA, “Are You Ready?” *Guidance on Biological Threats*; available online at http://www.fema.gov/areyouready/biological_threats.
- *Center for Disease Control and Prevention* website, www.bt.cdc.gov.

Section 3-8: CBRNE--Radiological Incidents

Introduction

Overview: Radiological Dispersion Device (RDD)

Overview: Improvised Nuclear Device

Hazards of Nuclear Devices

Phases of Response

Radioactive Fallout

Emergency Worker Guidelines

Controlling Occupational Exposures and Doses to Emergency Workers

Understanding Radiation Risks

Symptoms of Radiation Exposure

Acute Exposure

Chronic Exposure

Electromagnetic Pulse (EMP)

Contacts

Reference

Introduction

A radiological incident is defined as an event or series of events, deliberate or accidental, leading to the release, or potential release, into the environment of radioactive material in sufficient quantity to warrant consideration of protective actions. Use of a *Radiological Dispersion Device (RDD)* or *Improvised Nuclear Device (IND)* is an act of terror that results in a radiological incident.

Overview: Radiological Dispersion Device (RDD)

An RDD is any device that causes the purposeful dissemination of radioactive material, across an area with the intent to cause harm, without a nuclear detonation.

RDDs pose a threat to public health and safety through the malicious spread of radioactive material by some means of dispersion. An RDD combines a conventional explosive device – such as a bomb – with radioactive material. The explosion adds an immediate threat to human life and property. Other means of

dispersal, both passive and active, may be employed.

There is a wide range of possible consequences that may result from an RDD, depending on the type and size of the device and how dispersal is achieved. The consequences of an RDD may range from a small, localized area, such as a single building or city block, to large areas, conceivably several square miles. However, most experts agree that the likelihood of impacting a large area is low. In most plausible scenarios, the radioactive material would not result in acutely harmful radiation doses, and the primary public health concern from those materials would be increased risk of cancer to exposed individuals.

Hazards from fire, smoke, shock (physical, electrical, or thermal), shrapnel (from an explosion), hazardous materials, and other chemical or biological agents may also be present.

Terrorist use of an RDD, often called a “dirty nuke” or “dirty bomb,” is considered far more likely than use of a nuclear explosive device. It is designed to scatter dangerous and sub-lethal amounts of radioactive material over a general area.

The primary purpose of an RDD is to cause psychological fear and economic disruption. Some devices could cause fatalities from exposure to radioactive materials.

Depending on the speed at which the area of the RDD detonation was evacuated or how successful people were at sheltering-in-place, the number of deaths and injuries

from an RDD might not be substantially greater than from a conventional bomb explosion. But the public perception and fear may be considerable.

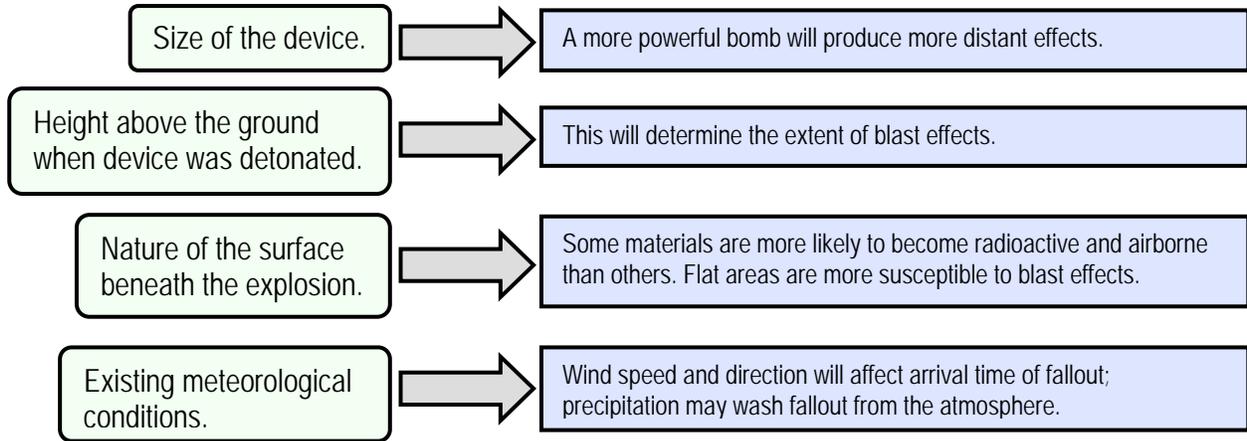
The size of the affected area and level of destruction caused by an RDD would depend on the sophistication and size of the conventional bomb, type of radioactive material used, quality and quantity of radioactive material, and local meteorological conditions (primarily wind and precipitation). The area affected could be placed off-limits to the public for several months during cleanup efforts.

Overview: Improvised Nuclear Device (IND)

An IND is an illicit nuclear weapon bought, stolen, or otherwise originating from a nuclear State, or a weapon fabricated by a terrorist group from illegally obtained fissile nuclear weapons material that produces a nuclear explosion. The nuclear yield achieved by an IND produces extreme heat, powerful shockwaves, and prompt radiation that would be acutely lethal for a significant distance. It also produces radioactive fallout, which may spread and deposit over very large areas. If a nuclear yield is not achieved, the result would likely resemble an RDD in which fissile weapons material was utilized.

Hazards of Nuclear Devices.

The extent, nature, and arrival time of these hazards are difficult to predict. The geographical dispersion of hazard effects will be defined by the following:



Phases of Response

Typically, the response to an RDD or IND incident can be divided into three time phases (early, intermediate, and late) that are generally accepted as being common to all radiological incidents.

Although the phases cannot be represented by precise time periods, and may overlap, they provide a useful framework for the considerations involved in emergency response planning.

The phases are provided in Table 3-8-1 below and on the next page.

Table 3-8-1: RDD/IND - Phases of Response

Early Phase (Emergency Phase)	<p>Period at the beginning of the incident when immediate decisions for effective protective actions are required, and when actual field measurement data generally are not available. Exposure to the radioactive plume, short-term exposure to deposited radioactive materials, and inhalation of radioactive material are generally taken into account when considering protective actions for the early phase. The response during the early phase includes initial emergency response actions to protect public health and welfare in the short term, considering a time period for protective actions of hours to a few days. Priority should be given to lifesaving and first-aid actions. In general, early phase protective actions should be taken very quickly, and the protective action decisions can be modified later as more information becomes available.</p> <p><i>RDD.</i> If an explosive RDD is deployed without warning, however, there may be no time to take protective actions to significantly reduce plume exposure. Also, in the event of a covert dispersal, discovery or detection may not occur for days or weeks, allowing contamination to be dispersed broadly by foot, vehicular traffic, wind, rain, or other forces.</p> <p><i>IND.</i> If an IND explodes, there may only be time to make early phase protective action recommendations (e.g., evacuation, or shelter-in-place) many miles from the explosion to protect areas against exposure to fallout. Areas close to the explosion will be devastated, and communications and access will be extremely limited. Assistance will likely not be forthcoming or even possible for some hours. Self-guided protective actions are likely to be the best recourse for most survivors (e.g., evacuation perpendicular to the plume movement if it can be achieved quickly, or sheltering in a basement or large building for a day or more after the incident). Due to the lack of communication and access, outside guidance and assistance to these areas can be expected to be delayed. Therefore, response planning and public outreach programs are critical measures to meet IND preparedness objectives.</p> <p>It is during the Early Phase that the CISAR Responder will conduct most lifesaving operations.</p>
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Intermediate Phase	The intermediate phase of the response; may follow the early phase response within as little as a few hours. Usually assumed to begin after the incident source and releases have been brought under control and protective action decisions can be made based on measurements of exposure and radioactive materials that have been deposited as a result of the incident. Activities in this phase typically overlap with early and late phase activities, and may continue for weeks to many months, until protective actions can be terminated. Decisions must be made on the initial actions needed to recover from the incident, reopen critical infrastructure, and return to a state of relatively normal activity. Local officials must weigh public health and welfare concerns, potential economic effects, and many other factors when making decisions.
Late Phase	The late phase is the period when recovery and cleanup actions designed to reduce radiation levels in the environment to acceptable levels are commenced. This phase ends when all the remediation actions have been completed.

Radioactive Fallout

Even if individuals are not close enough to the nuclear blast to be affected by the direct impacts, they may be affected by radioactive fallout. Any nuclear blast results in some fallout. Blasts that occur near the earth's surface create much greater amounts of fallout than blasts that occur at higher altitudes. This is because the tremendous heat produced from a nuclear blast causes an up-draft of air that forms the familiar mushroom cloud. When a blast occurs near the earth's surface, millions of vaporized dirt particles also are drawn into the cloud. As the heat diminishes, radioactive materials that have vaporized condense on the particles and fall back to Earth. The phenomenon is called radioactive fallout. This fallout material decays over a long period of time, and is the main source of residual nuclear radiation.

Fallout from a nuclear explosion may be carried by wind currents for hundreds of miles if the right conditions exist. Effects from even a small portable device exploded at ground level can be potentially deadly.

Nuclear radiation cannot be seen, smelled, or otherwise detected by normal senses. Radiation can only be detected by radiation monitoring devices. This makes radiological emergencies different from other types of emergencies, such as floods or hurricanes. Monitoring can project the fallout arrival times, which will be announced through official warning channels. However, any increase in surface build-up of gritty dust and dirt should be a warning for taking protective measures.

Emergency Worker Guidelines

The response during the early phase includes initial emergency response actions to protect public health and welfare in the short term. Priority should be given to lifesaving, first-aid, and also include actions such as suppression of fires that could result in further loss of life.

For the purposes of this Guidance, "emergency worker" is defined as any worker who performs an early or intermediate phase work action. Table 3-8-2 on the next page shows the emergency worker guidelines for early phase emergency response actions.

Table 3-8-2: Emergency Worker Guidelines in the Early Phase^a

Total effective dose equivalent (TEDE) ^b guideline	Activity	Condition
5 rem^c (0.05 Sv)	All occupational exposures	All reasonably achievable actions have been taken to minimize dose.
10 rem (0.1 Sv)	Protecting valuable property necessary for public welfare (e.g., a power plant).	<ul style="list-style-type: none"> • All appropriate actions and controls have been implemented; however, exceeding 5 rem (0.05 Sv) is unavoidable. • Responders have been fully informed of the risks of exposures they may experience. • Dose >5 rem (0.05 Sv) is on a voluntary basis. • Appropriate respiratory protection and other personal protection is provided and used. • Monitoring available to project or measure dose.
25 rem (0.25 Sv)^d	Lifesaving or protection for large populations. It is highly unlikely that doses would reach this level in an RDD incident; however, worker doses higher than 25 rem (0.25 Sv) are conceivable in a catastrophic incident such as an IND incident.	<ul style="list-style-type: none"> • All appropriate actions and controls have been implemented; however, exceeding 5 rem (0.05 Sv) is unavoidable. • Responders have been fully informed of the risks of exposures they may experience. • Dose >5 rem (0.05 Sv) is on a voluntary basis. • Appropriate respiratory protection and other personal protection is provided and used. • Monitoring available to project or measure dose.

^a In the intermediate and late phases, standard worker protections, including the annual 5 rem occupational dose limit, would normally apply.

^b The projected sum of the effective dose equivalent from external radiation exposure and committed effective dose equivalent from internal radiation exposure.

^c In the U.S., radiation doses are measured in units called *rem*. Under the metric system, dose is measured in units called sieverts (*Sv*). One *Sv* is equal to 100 *rem*.

^d EPA's 1992 Protective Action Guide (PAG) Manual states that "Situations may also rarely occur in which a dose in excess of 25 rem for emergency exposure would be unavoidable in order to carry out a lifesaving operation or avoid extensive exposure of large populations." Similarly, the NCRP and ICRP raise the possibility that emergency responders might receive an equivalent dose that approaches or exceeds 50 rem (0.5 Sv) to a large portion of the body in a short time (Limitation of Exposure to Ionizing Radiation, National Council on Radiation Protection and Measures, NCRP Report 116 (1993a). If lifesaving emergency responder doses approach or exceed 50 rem (0.5 Sv) emergency responders must be made fully aware of both the acute and the chronic (cancer) risks of such exposure.

The emergency worker guidelines were developed for a wide range of possible radiological scenarios, from a small RDD that may impact a single building to an IND that could potentially impact a large geographic region. Therefore, the 5, 10 and 25 *rem* guidelines (Table 2 above) should not be viewed as inflexible limits applicable to the range of early phase emergency actions.

Because of the range of impacts and case-specific information needed, Incident Commands should establish a “turn-back” dose level for responders.

With proper preparedness measures (training, personnel protective equipment, etc.) many radiological emergencies, even lifesaving operations, may be manageable within the 5 *rem* (0.05 *Sv*) annual occupational limit.

Moreover, Incident Commanders should make every effort to employ the “as low as reasonably achievable” (ALARA) principle after an incident.¹

Still, in some incidents medically significant doses above the annual occupational 5 *rem* (0.05 *Sv*) dose limit may be unavoidable. For instance, in the case of a catastrophic incident, such as an IND, Incident Commanders may need to consider raising the lifesaving and valuable property (i.e., necessary for public welfare) emergency worker guidelines in order to prevent further loss of life and prevent the spread of massive destruction. Ensuring that emergency workers have full knowledge of the associated risks prior to initiating emergency action and medical evaluation of

emergency workers after such exposure is essential.

Controlling Occupational Exposures and Doses to Emergency Workers

Appropriate measures should be taken to minimize radiation dose to emergency workers responding to an RDD or IND incident.

Emergency management officials responsible for an incident should take steps to keep all doses to emergency workers ALARA. Protocols for maintaining ALARA should include the following health physics and industrial hygiene practices:

- Minimize the time spent in the contaminated area (e.g., rotation of emergency responders);
- Maintain distance from sources of radiation;
- Shield radiation source;
- Use hazard controls that are applicable to the work performed;
- Properly select and use respirators and other PPE to minimize exposure to internally deposited radioactive materials (e.g., alpha and beta emitters); and
- Use prophylactic medications, when appropriate, that either blocks the uptake or reduces the retention time of radioactive material to the body.

To minimize the risks from exposure to ionizing radiation, all emergency responders should be trained and instructed to follow emergency response plans and protocols and be advised on how to keep exposures ALARA.

¹ ALARA: As low as reasonably achievable; a process to control or manage radiation exposure to individuals and releases of radioactive material to the environment so that doses are as low as social, technical, economic, practical, and public welfare considerations permit.

Understanding Radiation Risks

If there is the possibility that emergency workers would receive a radiation dose higher than the 5 *rem* (0.05 *Sv*) guideline, emergency workers should be trained to understand the risk associated with such doses, including a thorough explanation of the latent risks associated with receiving doses greater than 5 *rem* (0.05 *Sv*), and acute risks at higher doses.

Emergency workers should be fully aware of both the projected acute and chronic risks (cancer) they may incur in an emergency response action. Furthermore, emergency workers cannot be forced to perform a rescue action involving radiation doses above regulatory limits, and they should be given reasonable assurance that normal controls cannot be utilized to reduce doses to less than 5 *rem* (0.05 *Sv*). After the event, it is essential that emergency workers be provided with medical follow up.

The estimated risk of fatal cancer for healthy workers who receive a dose of 10 *rem* (0.10 *Sv*) is about 0.46 percent over the worker's lifetime (i.e., 405 fatal cancers per 1000 people, or 0.4-0.5 percent). The risk scales linearly. For workers who receive a dose of 25 *rem* (0.25 *Sv*), the risk is about 1.1 percent. The risk is believed to be greater for those who are younger at the time of exposure. For example, for 20-30 year olds the estimated risk of fatal cancer at 25 *rem* (1.75 percent) is about twice as large as the risk for 40-50 year olds (0.8 percent).

Above 50 *rem* (0.5 *Sv*) acute effects are possible. Where lifesaving actions may result in doses that approach or exceed 50 *rem* (0.50 *Sv*), such as in an IND incident, emergency workers need to have a full understanding of the potential acute effects of the expected radiation exposure, in addition to the risk of chronic effects. The decision to take these lifesaving actions must be based on the estimation that the

human health benefits of the action exceed the safety and health risks to the emergency workers.

Symptoms of Radiation Exposure

The IC must strive to limit the radiation exposure of responders when conducting CISAR operations. From extensive studies of persons who suffered radiation exposure, the following information was obtained:

- The more radiation dose a person receives, the greater the chance of developing cancer;
- It is the chance of cancer occurring, not the severity of cancer, that increases as the radiation dose increases;
- Radiation induced cancers do not appear until years after the radiation dose is received; and
- The risk from radiation exposure will vary among individuals.

Acute Exposure

Acute exposure is exposure to a large, single dose of radiation, or a series of moderate doses received during a short period of time. Large acute doses can result from accidental or emergency exposures or from specific medical procedures (radiation therapy).

In most cases, a large acute exposure to radiation causes both immediate and delayed effects. Delayed biological effects can include cataracts, temporary or permanent sterility, cancer, and harmful genetic effects. For humans and other mammals, acute exposure to the whole body, if large enough, can cause rapid development of radiation sickness, evidenced by gastrointestinal disorders, bacterial infections, hemorrhaging, anemia, loss of body fluids, and electrolyte imbalance. An extremely high dose of acute radiation exposure can result in death within a few hours, days, or weeks.

Chronic Exposure

Chronic exposure is continuous or intermittent exposure to low doses of radiation over a long period of time. With chronic exposure, there is a delay between the exposure and the observed health effect. These effects can include cancer and other health outcomes such as benign tumors, cataracts, and potentially harmful genetic effects.

Electromagnetic Pulse (EMP)

In addition to other effects, a nuclear weapon detonated in or above the earth's atmosphere can create an electromagnetic pulse (EMP), a high-density electrical field. An EMP acts like a stroke of lightning but is stronger, faster, and shorter.

What CISAR responders need to understand is that an EMP can seriously damage electronic devices connected to power sources or antennas. This includes communication systems, computers, electrical appliances, and automobile or aircraft electronic systems. The damage could range from a minor interruption to actual burnout of components. Most electronic equipment within 1,000 miles of a high-altitude nuclear detonation could be affected. Battery-powered radios with short antennas generally would not be affected. Although an EMP is unlikely to harm most people, it could harm those with pacemakers or other implanted electronic devices.

An EMP can severely limit a CISAR responder's ability to coordinate SAR operations, logistics, and the use of communications and medical support equipment. SAR operations should continue, however, they will be more difficult to perform.

Contacts

- 911/dispatch to alert police/bomb squad and fire/HazMat;

- Radiation Emergency Assistance Center/Training Site (REAC/TS) – provides medical care for radiation emergencies. They are equipped to deploy physicians, nurses, EMT paramedics, health physicists, radiobiologists and coordinators with the equipment and supplies needed to treat radiation injury. For info on treatment or training, contact REAC/TS at 865-576-3131 or EMERGENCY 24 hour assistance at 865-576-1005.
- Domestic Nuclear Detection Office Joint Analysis Center (DNDO/JAC) – DNDO improves the nation's capability to detect and report unauthorized attempts to import, possess, store, develop, or transport nuclear or radiological material. The JAC coordinates nuclear detection events and the technical support to Federal, state, and local authorities. The JAC can be contacted 24/7 at 877-363-6522.
- National Response Center (NRC) – operated by the U.S. Coast Guard, receives reports required when dangerous goods and hazardous substances are spilled. After receiving notification of an incident, the NRC will immediately notify the appropriate Federal On Scene Coordinator and concerned Federal agencies; call NRC (24 hours) 1-800-424-8802
- CDC Emergency Preparedness Branch; 24-hour telephone number: 770-488-7100.
- Military shipments: for assistance in incidents involving materials being shipped by, for, or to DOD, call one of the following numbers (24 hours);
 - 703-697-0218 (call collect) (U.S. Army Operations Center) for incidents involving explosives and ammunition;

- 1-800-851-8061 (toll free) (Defense Logistics Agency) for incidents involving dangerous goods other than explosives and ammunition.

Reference

The information in this Section was obtained from the following source: Department of Homeland Security, *Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents*.

Section 3:9: Radiological Dispersal Device (RDD) Response Actions

CISAR Responder Protective Measures

Protecting the Injured and Exposed after RDD Detonation

Reference

CISAR Responder Protective Measures

As with any radiation, avoid or limit exposure. This is particularly true of inhaling radioactive dust that results from the explosion. If there is visual dust or other contaminants in the air, breathe through the cloth of your shirt or coat to limit your exposure. If you manage to avoid breathing radioactive dust, your proximity to the radioactive particles may still result in some radiation exposure.

In a known RDD environment, CISAR responders must protect themselves. The following guidance is provided for CISAR responders when conducting lifesaving operations after detonation of an RDD:

- Approach the release site with caution. Based on expert advice, position personnel, vehicles, and command post at a safe distance upwind and uphill of the site, if possible. Ensure your own physical safety. Look for fires, exposed high-voltage wires, sharp or falling objects, tripping hazards, or hazardous chemicals. Be alert for changing conditions.
- Wear a mask to reduce the dose from inhalation of radioactive dust. Ideally the mask should be a full face mask with a HEPA filter, but even breathing through a handkerchief or cloth will help. There will be little danger from radioactive

gases, so a self-contained breathing mask, while effective, is not necessary unless there are other gasses or toxins present.

- Dust will collect on clothing. After you leave the contaminated environment, remove and discard clothing in a designated area. If you fail to remove clothing you will continue to receive radiation exposure and expose others. Wear loose fitting clothes covering as much of your body as possible. Any removable garment that will prevent the dust from coming into direct contact with your skin will suffice.
- Open wounds or abrasions must be protected from radioactive contamination.
- If running water or showers are available, full body rinsing with lukewarm water is advised. Even a fire hose may remove most contamination not already removed with the outer clothing.
- Do not eat, drink, or smoke while exposed to potentially radioactive dust or smoke. Due to the possibility of heat stress, drinking water may be necessary for people working in high temperatures with bulky protective clothing. If absolutely necessary to drink water,

drink from a canteen or other closed container.

- If radiation monitoring instruments are available, wrap them in plastic bags to prevent their contamination. Use them to map the areas leading up to the highest dose rates. Enter the high dose rate areas only when necessary to save a life, make these entries as short as possible, and rotate the personnel who make these entries.

Protecting the Injured and Exposed after RDD Detonation

- Seriously injured people should be removed from the source of radiation, stabilized, and sent to hospitals first.
- After treatment of serious physical injuries, preventing the spread of the radioactive material or unnecessary exposure of other people is paramount. The following immediate response actions should be performed without waiting for any radiation measurements.
 - Establish an exclusion zone around the source. Mark the area with ropes or tapes. Reroute traffic.
 - Limit entry to rescue personnel only. Detain uninjured people who were near the event or who are inside the control zone until they can be checked for radioactive contamination, but do not delay treatment of injured people or transport to a hospital for this purpose.

- Take action to limit or stop the release of more radioactive material, if possible, but delay cleanup attempts until radiation protection technicians are on the scene.
- Tell nearby hospitals to expect the arrival of radioactively contaminated and injured people.
- Everyone near the scene should be checked for radioactive contamination. As soon as you can obtain radiation measuring equipment, establish a decontamination area for this purpose. Decontaminate people whose injuries are not life-threatening (broken arms, etc.) before sending them to hospitals. Do not send people without physical injuries to hospitals.
- Record keeping is as important for the long-term health of the victims as it is for the emergency responders. Record contact information for all exposed people so they can be given medical examinations later. The Department of Health and Human Services will request this information later.

Reference

The information in this Section was obtained from the following source: Centers for Disease Control, *Casualty Management After a Deliberate Release of Radioactive Material Fact Sheet* (September 19, 2007).

Section 3-10: CBRNE--Improvised Nuclear Device (IND) Response Actions

CIS Responder Protective Measures

Protecting the Injured and Exposed after IND Detonation

Reference

CISAR Responder Protective Measures

The following guidance is provided for CISAR responders when conducting lifesaving operations after detonation of an IND:

- Stay away from ground zero. Enter the surrounding area only to save lives. The radiation levels may be very high.
- Ensure your own physical safety. Look for fires, exposed high voltage wires, sharp or falling objects, tripping hazards, or hazardous chemicals. Be alert for changing conditions.
- Wear a mask to reduce the dose from inhalation of radioactive dust. Ideally the mask should be a full face mask with a HEPA filter, but even breathing through a wet handkerchief or cloth will help. There will be little danger from radioactive gases, so a self contained breathing mask, while effective, is not necessary.
- Dust will collect on your clothing. After you leave the contaminated environment, remove and discard clothing in a designated area. If you fail to remove clothing you will continue to receive radiation exposure and expose others. Wear loose fitting clothes covering as much of your body as possible. Any removable garment that will prevent the dust from coming into direct contact with your skin will suffice.
- Open wounds or abrasions must be protected from radioactive contamination.
- If running water or showers are available, full body rinsing with lukewarm water is advised. Even a fire hose may remove most contamination not already removed with the outer clothing.
- Wash vehicles before permitting them to leave the scene, except for emergency vehicles performing life-saving functions.
- Do not eat, drink, or smoke while exposed to potentially radioactive dust or smoke. Due to the possibility of heat stress, drinking water may be necessary for people working in high temperatures with bulky protective clothing. If absolutely necessary to drink water, drink from a canteen or other closed container.
- Use the form attached to this brochure to record contact information for all exposed workers so they can be given medical examinations later. The Department of Health and Human Services will request this information later.

- Wash thoroughly with lukewarm water as soon as possible after leaving the area, even if you decontaminated before leaving the scene.

Protecting the Injured and Exposed after IND Detonation

- Physical injuries are more serious than radioactive contamination. Deal with life-threatening conventional injuries first. When the patients are stable, deal with radioactive contamination. Patients who were treated and are now stable should be evacuated from radiation areas.
- Tell nearby hospitals to expect the arrival of radioactively contaminated and injured people.
- Victims will have radioactive dust on their clothing. If many people are covered with dust, it will not be feasible to conduct a careful survey of each person. Assume all of the dust is radioactive. Set up a facility where each person can remove and discard clothing in a designated area, wash as thoroughly as possible, and don coveralls or wrap in blankets. This facility should be upwind and far enough from ground zero to prevent radiation levels from interfering with monitoring of patients.

- Many people without apparent injuries will leave the scene. Make public service announcements on radio and television advising these people to bag their clothes, place the clothes outdoors, and wash thoroughly. People experiencing nausea, vomiting, reddening of the skin, or unexplained lesions should be advised to report to a hospital immediately and request a checkup for Acute Radiation Syndrome (ARS).

*Note: Information on Acute Radiation Syndrome (ARS) can be found at the Center for Disease Control website:
<http://www.bt.cdc.gov/radiation/ars.asp>.*

Reference

The information in this Section was obtained from the following source: Centers for Disease Control, *Casualty Management After Detonation of a Nuclear Weapon In an Urban Area Fact Sheet* (May 20, 2005)

All people exposed to radiation, both emergency responders and members of the public, will require future medical monitoring. Collect the following information from each person who was in the affected area and retain it until requested by the Department of Health and Human Services:

Date _____ Name _____

Home Address _____

Street or P.O. Box _____

City, State, Zip _____

Telephone(s) _____

Social Security Number _____

Gender M F

Date of birth (or approximate age)

The following information would be useful for further medical evaluation. Collect it only if you have time to collect the information without delaying treatment of the injured:

Date of Exposure _____ Time of Exposure _____

Location _____

Describe the location where the person received his or her exposure

Duration of exposure _____

Did person have any open wounds? Y N

Did person use respiratory protection? Y N

What kind? _____

Did person eat or drink while in the area? Y N

Did you find any external contamination on the person? Y N

Emergency contact information: Name _____

Address: _____

(City, state, ZIP)

Telephone: _____

Employer: _____

Section 3-11: CISAR--Searches

Overview

Rapid Search (Hasty Search)

Reconnaissance

Special Response Teams (RSTs)

Primary Search

Secondary Search

Probability of Detection

Special Response Teams (SRT)

Human Remains

Overview

The search terms discussed in the following paragraphs are particularly useful during CISAR operations involving populated land or flooded areas and are familiar to most State, Tribal, Territorial, and local CISAR responders. Federal CISAR responders should be familiar with and use these terms and concepts as well.¹

SAR responders attempt to conduct as many rescues as possible while the search operations continue. CISAR aircraft, boats and response teams may need to continually switch between conducting search operations and rescue operations, especially during the hasty search when many persons are in distress.

Most CISAR search operations generally progress through a sequence of rapid,

primary, and secondary searching. These search phases may overlap or vary within different portions of the overall search area. Increasing levels of search planning are customarily involved as searching progresses to the primary and then to the secondary phases.

Rapid Search (Hasty Search)

“Rapid search” is an umbrella term that covers a variety of search activities. Other terms used for rapid search include “hasty search” or “initial reflex search,” depending on the background and training of the CISAR responders involved. Additional terms are also used by some CISAR responders to describe certain aspects of rapid searches, such as “spot searches” and “smart searches.” Emergency plans may provide additional guidance on what terms to use when CISAR responders from various organizations and levels of government are working together for a particular incident.

¹ These search terms are not normally used for national or international civil SAR; nor for CISAR operations involving aeronautical or maritime distress situations.

A rapid search is conducted as soon as possible to:

- Save as many lives as quickly as possible;
- Target high probability locations for searching;
- Quickly sweep targeted areas to find survivors; and
- Help determine the scope, nature, and magnitude of CISAR operations.

The time required for a rapid search will depend on factors such as available search resources, challenges inherent in the search area, and the number and needs of survivors. The rapid search should typically be completed within 24 hours.

The rapid search typically involves a fast-paced visual inspection of the area accompanied by vocal or audio hailing. This may be an air effort with surface units called in as necessary, or vice versa. The search can be compared to medical triage when it helps prioritize initial efforts in an expansive situation.

Search tactics may include:

- *Trolling*: zigzag area search with additional aircraft in trail;
- *Spot Search*: visual scan for survivors starting at a point followed by expanding squares;
- *Sound Sweep*: loud hailers and sound of aircraft bring people out; and
- *Quick scans*: conducted around structures and in selected voids.

Reconnaissance

Particularly if no area assessments were conducted before CISAR aircraft, boats, and response teams arrive on scene, CISAR responders should conduct reconnaissance and assessments throughout the rapid search.

Reconnaissance is used to influence immediate and future SAR efforts and provide information to the Incident Command that may be pertinent to non-SAR operations, including body recoveries. The SMC or OSC may designate selected personnel or response teams solely to conduct reconnaissance efforts. The information gained will be used to help prioritize search areas and optimize resource allocation during the more systematic primary and secondary searches (discussed below).

Primary Search

Following the rapid search, a primary search is conducted (normally completed within 48 hours). The primary search is typically conducted by surface SAR responders supported by aircraft. Primary searches involve complete circumnavigation of buildings and other structures, looking in doors and windows while hailing for survivors and entering buildings where evidence of life and the risk to rescuers is acceptable.

Normally, personnel involved in primary searches have received some prior, or on-the-spot training and instructions, use standard procedures to mark structures searched (see Section 3-23: Structural Marking Systems), document the results, and can call for aircraft, boats, or ground support to either facilitate their own efforts or remove survivors.

Secondary Search

Following the primary search, a secondary search is used to systematically search enclosed areas, such as each room in a particular building. Forced entry, debris removal or authorization for entry may be required. Searchers will need instructions on whether they should conduct rescues when they find survivors or provide information to enable others to perform the rescue. In many

instances, this will depend on the condition and situation of the survivor.

Probability of Detection

The probability of detecting survivors is affected by factors such as the complexity of the location to be searched, search pace, search team size and capabilities, environmental factors, and available sensors. These variables must be taken into account when determining the probability that survivors had been in a searched area, they would have been found. This information is critical for trained search planners to optimize use of available search resources during current and subsequent area searches.

Special Response Teams (SRTs)

SRTs may be used, especially during the rapid search, to respond to large concentrations of persons in distress, or persons with special needs in known locations (see Section 3-22: Persons with Special Needs). These teams may have specialized training or equipment to deal with the anticipated situation to which they are responding, such as medical or law enforcement capabilities.

SRTs should target locations already identified in advance in relevant emergency plans, such as:

- Child care and school facilities;
- Hospitals, nursing homes, and mental institutions;
- Shelters and marshalling points;
- Prisons and jails; and
- Areas of last refuge (possibly where local first responders will be found).

Human Remains

Discovered human remains are typically documented and bypassed during hasty and primary searches. Remains recovery should commence concurrently with CISAR secondary searches.

CISAR personnel should be instructed on how to arrange for human remains recovery as efforts to locate and assist survivors continues (See Section 3-18: Handling of Human Remains).

Reluctant Survivors

Response personnel should be aware of the possibility that some survivors will, to various degrees, resist rescue or evacuation efforts, and may pose a threat to rescuers if they think they will be forced to leave.

Notify the IC if this situation occurs.

Section 3-12: CISAR--Conclusion of Operations

Introduction

Termination

Suspension

Reopening Suspended CISAR Operations

Introduction

As per the NSP, CISAR operations shall normally continue until all reasonable hope of rescuing survivors has passed.

The SMC will recommend to the Incident Commander when to discontinue CISAR operations. This person should have the training and experience to make and defend this difficult decision, which should be objectively based on the facts of the operation. The Incident Commander will make the final decision.

If no SMC is assigned, the Incident Commander should normally make this decision.

Often external pressure (i.e. political, families of unaccounted for victims, etc.) may insist that CISAR operations continue beyond the time when there is any reasonable hope of rescuing survivors. Normally this can be minimized by keeping the public well-informed of the CISAR operation's progress and ensure those not directly involved understand the level of effort expended, and that the probability of success of further operations is negligible.

As per Table 3-12-1 below, two terms are used to indicate the conclusion of CISAR operations:

Table 3-12-1: Conclusion of CISAR Operations	
<p style="text-align: center;">Termination</p> <p>All known person(s) are located and accounted for.</p> <p>No other CISAR issues arise.</p> <p>If person(s) remain missing at the conclusion of the CISAR effort, the CISAR operation should not be formally closed, but suspended.</p>	<p style="text-align: center;">Active Search Suspended (ACTSUS) Pending Further Developments</p> <p>When the CISAR operation cannot be terminated because person(s) remain missing and further search efforts appear futile, the CISAR operation may be suspended.</p>

Termination

The decision as to whether to terminate CISAR operations should consider:

- The probability that survivors are still alive accounting for prevalent environmental factors since the incident;
- The cumulative probability that survivors would have been found; and
- The availability of CISAR responders to continue the search.

Termination of CISAR Operations

In CISAR operations, when all persons in need of rescue are accounted for and no other CISAR issues arise, then the CISAR operation can be terminated.

The Incident Commander, in consultation with the SMC, should consider on the basis of reliable information, that a rescue operation has been successful, or that the emergency no longer exists.

The Incident Commander shall promptly inform Federal, State, Tribal, Territorial, and local CISAR responders, authorities, or services which have been activated or notified.

Suspension

In making the decision to suspend a CISAR operation:

- Care should be taken not to end the search prematurely; and
 - The humanitarian significance of the effort must be considered, but also understanding there must be a limit to the time and effort that can be devoted to CISAR as dictated by the circumstances.
- Prior to suspending CISAR operations, a thorough review should be made. The decision to suspend operations should be based on an evaluation of the probability that there were survivors from the initial incident, the probability of survival after the incident, the probability that any survivors were within the search area, and the effectiveness of the search effort. The reasons for suspending CISAR operations should be clearly recorded.
- The review should also examine:
- Search decisions were based on proper assumptions and reasonable planning;
 - Certainty of the location of victims and other factors used in determining the search area;
 - Whether significant clues and leads should be re-evaluated;
 - The search plan to ensure that:
 - all assigned areas were searched;
 - there was effective use of air, boat, and ground CISAR responders to provide the best probability that victims would be located; and
 - compensation was made for search degradation caused by the environment, location (urban, rural, mountain, maritime, etc.) weather, mechanical, or other difficulties.
 - The determination about the survivability of survivors, considering:
 - time elapsed since the incident;

- environmental conditions; and
- age and physical condition of potential survivors;

The Incident Commander may continue CISAR operations beyond the time when normally be suspended due to humanitarian

considerations, large number of people involved, or forecast of greatly improved search conditions. However, CISAR responders should not be risked when the potential for saving life is minimal, or when their use may preclude their availability for other critical missions.

Suspension of CISAR Operations

Some CISAR operations may require extended searching. At some point, however, the Incident Commander, in consultation with the SMC, must make the difficult decision to suspend further CISAR operations pending the receipt of additional information.

As per the NSP: If the Incident Commander, in consultation with the SMC, determines the following:

1. Having thoroughly evaluated the effectiveness of the CISAR operation and all available information concerning the CISAR effort; and
2. Having made the determination that further CISAR efforts would be ineffective and most likely not result in additional lives saved; may
3. Temporarily suspend CISAR operations pending further developments.

The Incident Commander should promptly inform Federal, State, Tribal, Territorial, and local CISAR responders, authorities, or services which have been activated or notified.

Information subsequently received should be evaluated and CISAR operations resumed when justified on the basis of such information.

Reopening Suspended CISAR Operations

If significant new information is obtained, reopening CISAR operations should be considered. Reopening without good reason may lead to unwarranted use and risk of

injury to CISAR responders, possible inability to respond to other emergencies, and false hope among relatives.

However, if there is any real possibility to save additional lives, CISAR efforts should be resumed.

Section 3-13: Communications

NIMS Communications

Communications Plan

National Interoperability Field Operations Guide (NIFOG)

ESF #2 (Communications)

Other Interoperability Standards

SAR Frequencies

NIMS Communications

Communications issues pertinent to CISAR operations and integration of CISAR information into the common operating picture is covered in Chapter V of NIMS (<http://www.nimsonline.com/docs/NIMS-90-web.pdf>), including concepts and principles, as well as guidance on managing communications and information.

Communications Plan

Communications include all written, spoken, and electronic interaction among all audiences based upon their task-related needs.

A communications plan is a necessary part of all CISAR operations. The communications plan will ensure timely and effective communications resources are installed and supported with trained personnel throughout the CISAR operation.

The communications plan describes who will need interoperable communications capabilities, what will be done with available communications capabilities, how the objectives will be accomplished, and how the success of the communications plan will be measured.

The plan should provide for a heavy volume of communication use, as a CISAR incident will normally involve many responding organizations that need to communicate effectively with each other. Advance arrangements should be made to link means of interagency communications that are not inherently interoperable. Interagency communications must use standard terminology understood by all CISAR responders.

The plan should include objectives, goals, and tools for all communications requirements. Most communications plans should include planning for:

- Radio communications (terrestrial and satellite, digital and voice, frequencies);
- Print publications;
- Online communications;
- Media and public relations materials; and
- Signs.

National Interoperability Field Operations Guide (NIFOG)

Responders at every level of government need a communications plan that effectively addresses interoperable communications for

events of any potential scope. Of course, these plans must be supported with arrangements for the communications capabilities prescribed in the plans. The National Interoperability Field Operations Guide (NIFOG) provides a framework for interoperable communications.

The NIFOG is a pocket-sized guide of technical reference material for technicians responsible for communications used in disaster response applications. The NIFOG covers regulations on interoperability, available channels, and commonly used emergency frequencies.

The NIFOG is not a replacement for a communications plan, but provides specific guidance that should be included in communications plans.

ESF #2 - Communications Annex

FEMA activates ESF #2 when a significant impact to the communications infrastructure is expected or has occurred. When activated, ESF #2 provides communications support to the impacted area, as well as internally to the Unified Coordination Group (UCG) and associated UCG teams. Under ESF #2, FEMA provides communications support to CISAR responders, as well as short-term restoration of government communications.

Other Interoperability Standards

FEMA recommends adoption of the following standards that support interoperability among communications and information management systems:

- ANSI INCITS 398-2005: Information Technology – Common Biometric Exchange Formats Framework (CBEFF);
- IEEE 1512-2006: Standard for Common Incident Management Message Sets for Use by Emergency Management Centers;
- NFPA 1221: Standard for Installation, Maintenance, and Use of Emergency Services Communications Systems;
- OASIS Common Alerting Protocol (CAP) v1.1; and
- OASIS Emergency Data Exchange Language (EDXL) Distribution Element v1.0.

SAR Frequencies

Table 3-13-1 on the following page lists NIFOG SAR frequencies.

Table 3-13-1: NIFOG Communications Frequencies

Type of SAR	Frequencies Available
Land SAR	Typical Frequencies: 155.160, 155.175, 155.205, 155.220, 155.235, 155.265, 155.280 or 155.295 MHz. If Continuous Tone-Controlled Squelch Systems (CTCSS) is required, try 127.3 Hz (3A).
Water SAR	156.300 MHz (VHF Marine ch. 06) Safety and SAR; 156.450 (VHF Marine ch. 09) Non-commercial supplementary calling; 156.800 (VHF Marine ch. 16) Distress and calling; 156.850 (VHF Marine ch. 17) State control; 157.100 (VHF Marine ch. 22A) Coast Guard liaison.
Coast Guard Auxiliary	138.475, 142.825, 143.475, 149.200, 150.700 MHz (NB only).
Aeronautical SAR Coast Guard/DOD Joint SAR	3023, 5680, 8364 kHz (lifeboat/survival craft); 4125 kHz (distress/safety with ships and coast stations); 121.5 MHz emergency and distress; 122.9 MHz SAR secondary and training; and 123.1 MHz SAR primary. 243.0 MHz AM initial contact; 282.8 MHz AM working.
Military SAR	40.50 wideband FM U.S. Army/USN SAR; 138.450 AM, 138.750 AM; 121.5 MHz and 243.00 MHz AM USAF SAR
VHF Marine Channels	6, 9, 15, 16, 21A, 23A, 81A, 83A

Section 3-14: Delivery of Survivors

Places of Safety

Lily Pads

Lily Pad Services

Lily Pads: State, Tribal, Territorial, and Local Government Responsibility

Other Federal Government Support Responsibilities

Places of Safety

The IAMSAR Manual describes a place of safety as a location where:

- Rescue operations are considered to terminate;
- The lives of survivors are no longer threatened;
- Basic human needs (such as food, shelter and medical needs) can be met; and
- From which transportation arrangements can be made for the survivors' next or final destination.

Lily Pads

A lily pad is an interim stopping point during rescue operations where survivors can be accounted for, possibly have some initial basic needs cared for, and from which they can be transported to a place of safety.

For large numbers of persons in distress, it may be necessary to establish a temporary safe delivery point for intermediate handling of survivors. In major aircraft or marine disasters a short distance offshore, survivors might be transported to a suitable nearby landing area where a temporary emergency care center could be established. The survivors should be processed, provided with emergency care, and transported to a

permanently established emergency care center or a place of safety.

By using a temporary delivery point, a large number of survivors can be evacuated quickly. Secondary CISAR responders can then transfer survivors to medical care centers.

Use of lily pads can help CISAR responders remain focused more on rescue operations and less on transportation.

Lily Pad Services

The following are typical of services that may need to be provided at lily pads:

- On Scene Commander capability;
- Medical triage and first aid;
- Law enforcement;
- Animal containment;
- Communication with the SMC, SAR facilities, and places of safety;
- Refueling arrangements for SAR facilities; and
- Arrangements for food and rest for rescue personnel, and possibly for crew changes.

Lily Pads: State, Tribal, Territorial, and Local Government Responsibility

Large search areas involving large populations may require the use of multiple dispersed locations where lily pads and places of safety for CISAR operations will be established.

State, Tribal, Territorial, or local authorities are normally responsible for the establishment and support of lily pads (if required) and places of safety as well as welfare of the survivors once delivered. Depending on the extent to which a lily pad or place of safety is to be used, a person should be designated to facilitate and oversee services at these support locations.

It is important to avoid, if possible, delivering survivors to locations where their needs for care and further transportation cannot be met.

CISAR authorities are normally responsible for transport of survivors from lily pads to places of safety. However, the IC may assign this responsibility to others. This function can often be planned for and provided by authorities responsible for ESF

functions other than ESF #9. Similarly, arrangements must be made to transport survivors with critical medical or other special needs to facilities that can meet these needs.

Relevant State, Tribe, Territory, and local plans should be clear on how this is to be handled.

Other Federal Government Support Responsibilities

In addition to ESF #9, the following ESFs may be pertinent to lily pad support operations:

- ESF #1, Transportation;
- ESF #2, Communications;
- ESF #6, Mass Care, Housing, and Human Services;
- ESF #7, Logistics Management and Resource Support;
- ESF #8, Public Health and Medical Services; and
- ESF #13, Public Safety and Security.

Section 3-15: Exercises

Purpose

Objectives

Planning

Purpose

Since opportunities to handle actual incidents involving CISAR operations are rare and challenging, exercising CISAR plans is particularly important. Mass evacuation and CISAR operations may be difficult and costly, and the number of authorities involved in the response leads to complexity.

Objectives

CISAR exercises should ideally achieve the following objectives:

- Test implementation of planned command authorities and functions;
- Account for all survivors until they are delivered to a place of safety and can return to their homes;
- Identify and task available SAR resources and local resources such as hospitals, fire departments, and other community and transportation resources;
- Evaluate notification processes, resource availability, timeliness of initial response, real-time elements, conference capabilities and overall co-ordination;
- Ensure all agency roles are sorted out, understood and properly implemented;
- Test capabilities of potential OSCs and aircraft coordinators and ability to transfer OSC duties;
- Evaluate span of control;
- Evacuate an area or facility;
- Co-ordinate activities and achieve information exchanges;
- Communication by all available;
 - Information for all concerned (identify, merge, purge, retrieve and transfer to the right place in the right form at the right time);
 - New communication and information management technologies;
 - Media and next-of-kin; and
 - Test all communication links that may be needed for notification, co-ordination and support; and
- Safely transfer and care for passengers;
- Conduct medical triage and provide first aid;
- Exercise co-ordination with local response agencies;
- Provide food, water, and protective clothing to survivors;
- Test plans for mass rescue operations;
- Assess how effectively earlier lessons learned have been accounted for in updated plans and how well these lessons were disseminated; and
- Exercise external affairs, such as international and public relations;

- Necessary participants involved;
- JIC established quickly and properly staffed;
- Press briefings handled effectively (e.g., consistent information from different sources); and
- Rescued persons tracked, kept informed and needs monitored, and reunited with belongings.

Planning

The following steps are normally carried out during exercise planning:

- Agree on the exercise scenario, goals and extent;
- Assemble a multi-disciplinary planning team and agree on objectives for each aspect of the exercise;
- Develop the main events and associated timetables;
- Confirm availability of agencies to be involved, including any media representatives or volunteers;
- Confirm availability of transportation, buildings, equipment, aircraft, ships or other needed resources;
- Test all communications that will be used, including tests of radio and mobile phones at or near the locations where they will be used;
- Identify and brief all participants and people who will facilitate the exercise, and ensure that facilitators have good independent communications with person who will be controlling the exercise;
- Ensure that everyone involved knows what to do if an actual emergency should arise during the exercise;
- If observers are invited, arrange for their safety, and to keep them informed about the exercise progress;
- For longer exercises, arrange for food and toilet facilities;
- Use “exercise in progress” signs, advance notifications and other means to help ensure that person not involved in the exercise do not become alarmed;
- Schedule times and places for debriefs;
- Agree and prepare conclusions and recommendations with the entity responsible for handling each recommendation along with the due date for any actions;
- Prepare a clear and concise report and distribute it as appropriate to the participating organizations; and
- Consider the outcome of this exercise in planning future exercises.

Section 3-16: Geo-referencing

Introduction

What is Geo-referencing?

Geo-referencing Methods

U.S. National Grid (USNG)

Latitude-Longitude

Global Area Reference System (GARS)

Geo-referencing Matrix

Introduction

In the aftermath of Hurricane Katrina, the review of the Federal, military, State, and local SAR response found that SAR agencies used different methods to communicate geographic information. This added confusion and complexity to an extremely large scale SAR operation.

Federal, State, Tribal, Territorial, local, and volunteer CISAR responders working together in a CISAR environment face numerous challenges, including those relating to a lack of geospatial awareness. Three issues were identified during the Hurricane Katrina response:

1. How do CISAR responders navigate when landmarks such as street signs and homes are blown away?
2. How do CISAR responders communicate position in a common language?
3. The final problem is CISAR resource de-confliction - the ability to ensure multiple assets are not inappropriately operating in the same area –a significant problem for CISAR responders.

Resource de-confliction is a matter of safety, particularly with aircraft, to ensure the likelihood of a mid-air collision is minimized. Additionally, resource de-confliction is a matter of efficient and effective use of limited resources so that all areas receive appropriate, available CISAR response assets.

What is Geo-referencing?

To geo-reference is to define location in physical space and is crucial to making aerial and satellite imagery useful for mapping. Geo-referencing explains how position data (e.g., Global Positioning System (GPS) locations) relate to imagery and to a physical location.

Different maps may use different projection systems. Geo-referencing tools contain methods to combine and overlay these maps with minimum distortion.

Using geo-referencing methods, data obtained from observation or surveying may be given a point of reference from topographic maps already available.

Note: No single map/chart projection or coordinate/grid system will be perfect for all

applications. In the case of projecting the earth's curved surface on a flat surface, distortion of one or more features will occur. The conventions for locating points on the earth's surface for purposes of nautical and aeronautical navigation (long distances on small scale charts) is generally best conducted using latitude and longitude (spherical coordinates). Locating points on large-scale maps and for ground navigation is generally best accomplished with Cartesian-style plane coordinates (i.e., USNG). Large scale-maps can treat the Earth's surface as a plane – taking advantage of that simple geometric shape and math – rather than a complex sphere. Properly constructed large-scale maps – such as topographic maps take curvature of the Earth into account. Simple linear increments (i.e., meters) of plane coordinates are significantly easier for large-scale map users to handle accurately at high precision in the field than the more complex angular increments of latitude and longitude (i.e., degrees).

Geo-Referencing Methods

Three geo-referencing methods are to be used for CISAR operations anywhere in the

United States, as indicated in the National SAR Committee geo-referencing matrix located at the end of this Section.

U.S. National Grid (USNG)

The USNG is intended to create a more interoperable environment for developing location-based services within the United States and to increase the interoperability of location services appliances with printed map products by establishing a preferred nationally-consistent grid reference system. The USNG can be extended for use worldwide as a universal grid reference system, and can be easily plotted on USGS topographic maps by using a simple "read right, then up" method.

Note: the USNG and the Military Grid Reference System (MGRS) are functionally equivalent when referenced to NAD 83 or WGS 84 datums.

The coordinates are easily translated to distance, as they are actually in meters. Thus the distance between two coordinates can quickly be determined in the field.

Pages 114-115 explain how to find a position using USNG.

US National Grid (USNG) Coordinates: *World wide context.*

Information Sheet 2/1 in this series.

FGDC-STD-011-2001

From www.fgdc.gov/usng

The example below locates the Jefferson Pier at USNG: 18S UJ 2337 06519.

U.S. National Grid
100,000-m Square ID
UJ
— 43 00
UH
Grid Zone Designation
18S

A USNG value has three components.

Some maps may give this leading information in a grid reference box.

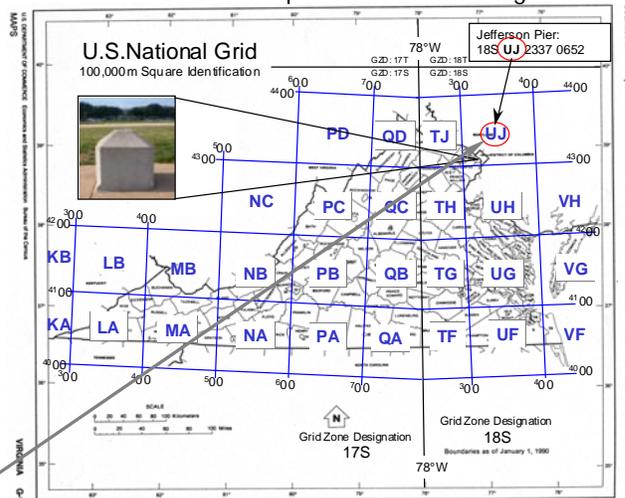
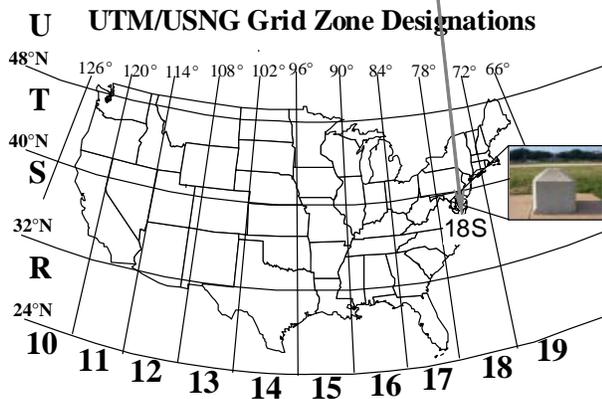
Grid Zone Designation (GZD):
6° x 8° longitude zone / latitude band.
100,000-m Square Identification:

18S UJ 2337 0651

Grid Coordinates:
Read right, then up.

“Read right, then up.”

USNG values have three components as seen above. The Grid Zone Designation gives a USNG value world-wide context with 60 longitudinal zones each 6° wide. Zones 10 - 19 cover the conterminous U.S. as seen below left. UTM zones are divided into 8° latitudinal bands. Together these 6° zones and 8° bands compose Grid Zone Designations. Example: 18S

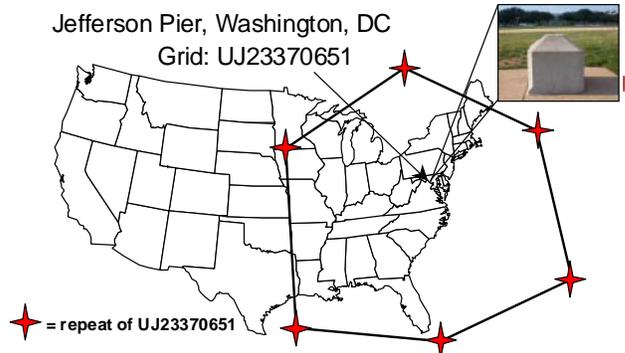


100,000-m Square Identifications
Example: UJ

GZDs are further subdivided into 100-km x 100-km squares with 100,000-m Square Identifications. In this example, the Jefferson Pier is located in UJ. These squares are organized and lettered so they do not repeat themselves but every 18°, which is approximately 1,000 miles in the mid-latitudes. The illustration at right depicts how far one must go before the letters UJ repeat. In the conterminous U.S. this ensures a given value such as UJ 2337 0651 is unique out of the entire state it is located in – as well as all surrounding states.

The Power of Truncated USNG Values

Jefferson Pier, Washington, DC
Grid: UJ23370651



Each 2 letter/8 digit USNG value (10-m posting) in the outlined area is unique.

In general, people in a local community may use the grid coordinates alone – for example: 233 065. The same numbers recurs about every 60 miles but normally that will not cause a problem when the general location is understood. This is similar to the way you tell someone only the last digits of a phone number when the area code is obvious. If there is a possibility of confusion include the letter pair also – for example: UJ 233 065. A letter pair recurs about every 1000 miles so even in a disaster relief effort there should be no other point with those coordinates nearby. A complete USNG reference such as 18S UJ 233 065 is nationally and globally unique. Typically a GPS receiver or other electronic device requires a complete USNG reference since unlike a human it does not intuitively understand the general location from context. You should always give a complete USNG reference whenever abbreviated coordinates might not be clear or when listing them on letterhead, a business card or advertisement.

Reading US National Grid (USNG) Coordinates: "Read right, then up."

Information Sheet 2/2 in this series.

FGDC-STD-011-2001

From www.fgdc.gov/usng

The example below locates the Jefferson Pier at USNG: 18S UJ 23371 06519.

U.S. National Grid	
100,000-m Square ID	
UJ	
⁴³ 00	
UH	
Grid Zone Designation	18S

A USNG value has three components.

Some maps may give this leading information in a grid reference box.

Grid Zone Designation (GZD):

6° x 8° longitude zone / latitude band.

100,000-m Square Identification:

18S UJ 2337 0651

Grid Coordinates:

Read right, then up.

"Read right, then up."

- Grid lines are identified by **Principal Digits**. Ignore the small superscript numbers like those in the lower left corner of this map.

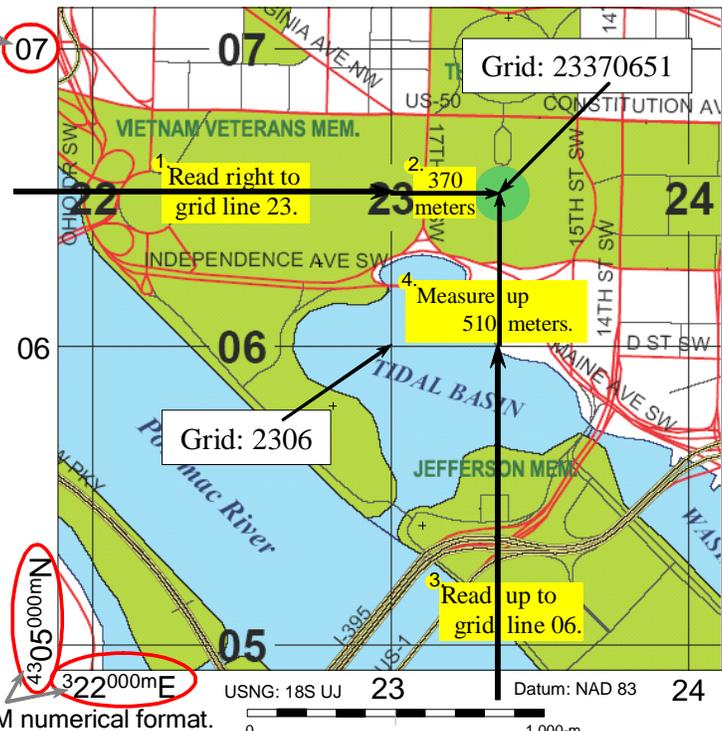
Reading USNG Grid Coordinates.

- Coordinates are always given as an even number of digits (i.e. 23370651).

- Separate coordinates in half (2337 0651) into the easting and northing components.

¹ - Read right to grid line 23. ² Then measure right another 370 meters. (Think 23.37)

³ - Read up to grid line 06. ⁴ Then measure up another 510 meters. (Think 06.51)



Ignore the small UTM superscript numbers that are provided for reference purposes. UTM numerical values are best suited for determining direction and distance as in surveying. USNG alpha-numeric values are best suited for position referencing because they can be given as only grid coordinates in a local area and with only the required precision for a particular task.

Users determine the required precision. These values represent a point position (southwest corner) for an area of refinement.	Four digits: 23 06 Six digits: 233 065 Eight digits: 2337 0651 Ten digits: 23371 06519	Locating a point within a 1,000-m square.
		Locating a point within a 100-m square (football field size).
		Locating a point within a 10-m square (modest size home).
		Locating a point within a 1-m square (man hole size).

A modest size home can be found or identified in a local area with only an 8-digit grid.

Complete USNG value: 18S UJ 2337 0651 - Globally unique.
 Without Grid Zone Designation (GZD): UJ 2337 0651 - Regional areas.
 Without GZD and 100,000-m Square ID: 2337 0651 - Local areas.

This illustrates how nationally consistent USNG coordinates are optimized for local applications. They serve as a universal map index value in a phone or incident directory for field operation locations. Unlike classic atlas grids (i.e. B3), these can be used with any paper map or atlas depicting the national grid and in web map portals such as the Washington, DC GIS (<http://dcgis.dc.gov>).

They can also be used in consumer GPS receivers to directly guide you to the location. This is especially beneficial at night, in heavy traffic, or major disasters when street signs are missing.



Point of Interest	Street Address	USNG Grid:	Telephone:
		18S UJ	(202)
Subway Sandwich & Salads	2030 M St., NW	2256 0826	223-2587
Subway Sandwich & Salads	430 8th St., SE	2698 0567	547-8200
Subway Sandwich & Salads	3504 12th St., NE	2740 1120	526-5999
Subway Sandwich & Salads	1500 Benning Rd, NE	2815 0757	388-0421

Latitude-Longitude

Latitude and Longitude is used by aircraft and boats during CISAR operations. The Latitude-Longitude is a geographic coordinate system used for locating positions on the Earth's surface. Latitude and longitude are an angular measurement in degrees (using the symbol, “ ° ”), minutes (using the apostrophe symbol, “ ’ ”), and seconds (using the quotation symbol, “ ″ ”).

Lines of Latitude are horizontal lines shown running east-to-west on maps and are known as “Parallels,” due to being parallel to the equator. Latitude is measured north and south ranging from 0° at the Equator to 90° at the poles (90° N for the North Pole and 90° S for the South Pole).

Lines of Longitude are vertical lines shown running north and south on maps and are known as “Meridians,” intersecting at the poles. Longitude is measured east and west ranging from 0° at the prime meridian to +180° East and -180° West.

Latitude and Longitude can be read and written in three different formats:

- Degrees, Minutes, Decimal Minutes (DD° MM.mm’);
- Degrees, Decimal Degrees (DD.DDDD°); and
- Degrees, Minutes, Seconds (DD° MM’ SS”).

Standard Latitude/Longitude format for CISAR operations

The standard Latitude/Longitude format for CISAR operations is Degrees, Decimal Minutes (DD° MM.mm’).

Latitude is always read and written first noting “North” since the U.S. is North of the Equator. Longitude is always read and written last noting “West” since the U.S. is West of the Prime Meridian.

Speaking Latitude and Longitude

For example, 39° 36.06’N by 76° 51.42’W, should be stated as per the following:

“Three nine degrees, three six decimal zero six minutes North by seven six degrees, five one decimal four two minutes West.”

The words, “degrees,” “minutes,” and “decimal” must be spoken.

Global Area Reference System (GARS)

GARS is a standardized geospatial area reference system for military and civil SAR application, and is based on lines of longitude and latitude. GARS provides a common language between the components and simplifies communications.

How GARS works.

- GARS is a worldwide system that divides the earth's surface into 30-minute by 30-minute cells.
- Each cell is identified by a five-character designation. (ex. 006AG).
- The first three characters designate a 30-minute wide longitudinal band. Beginning with the 180-degree meridian and proceeding eastward, the bands are

numbered from 001 to 720, so that 180° E to 179° 30'W is band 001; 179° 30'W to 179 00'W is band 002; and so on.

- The fourth and fifth characters designate a 30-minute wide latitudinal band. Beginning at the south pole and proceeding northward, the bands are lettered from AA to QZ (omitting I and O) so that 90° 00'S to 89° 30'S is band AA; 89° 30'S to 89° 00'S is band AB; and so on.
- Each 30-minute cell is divided into four 15-minute by 15-minute quadrants. The quadrants are numbered sequentially, from west to east, starting with the northernmost band. Specifically, the northwest quadrant is "1"; the northeast quadrant is "2"; the southwest quadrant is "3"; the southeast quadrant is "4".
- Each quadrant is identified by a six-character designation. (ex. 006AG3) The

first five characters comprise the 30-minute cell designation. The sixth character is the quadrant number.

- Each 15-minute quadrant is divided into nine 5-minute by 5-minute areas. The areas are numbered sequentially, from west to east, starting with the northernmost band.
- The graphical representation of a 15-minute quadrant with numbered 5-minute by 5-minute areas resembles a telephone keypad.

Each 5-minute by 5-minute area or keypad "key" is identified by a seven-character designation. The first six characters comprise the 15-minute quadrant designation. The seventh character is the keypad "key" number. (ex.006AG39).

Figure 3-7-1 below graphically depicts GARS; Figure 3-7-2 on the next page is an example GARS overlay.

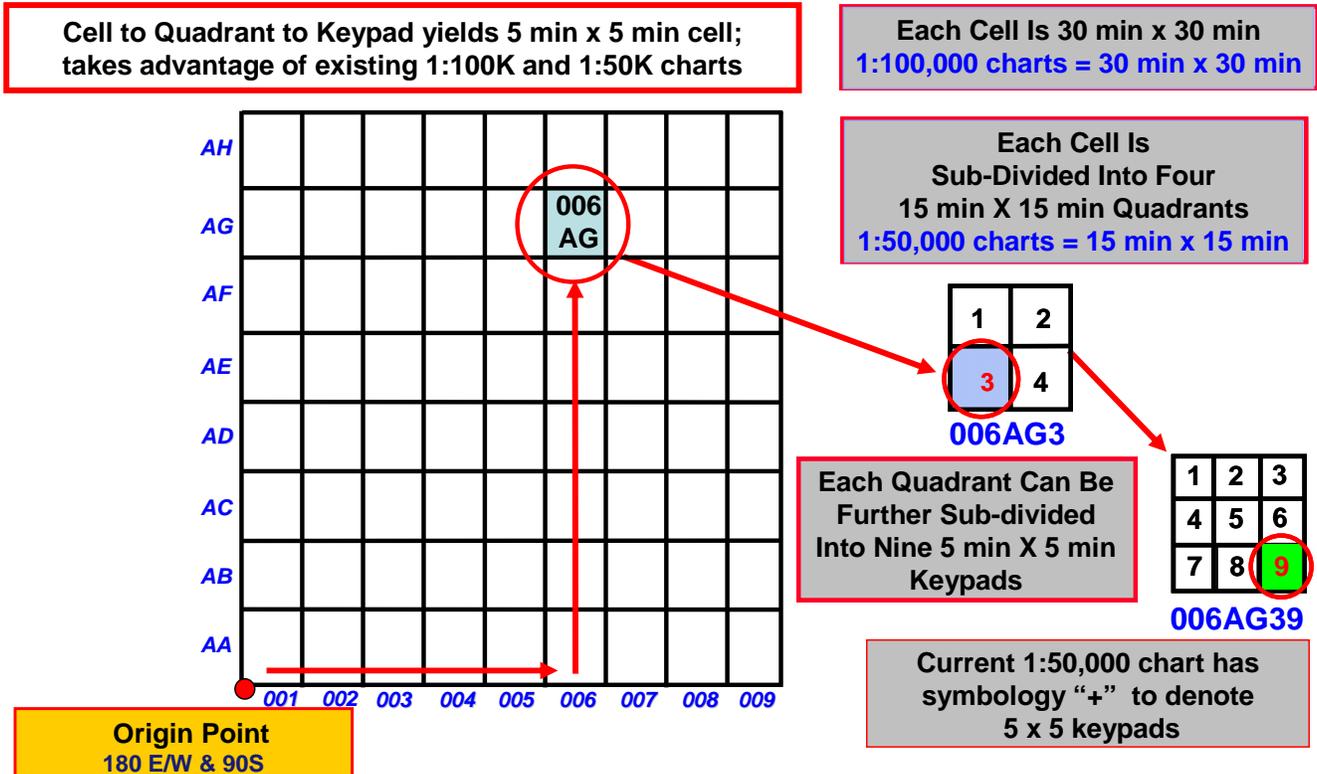
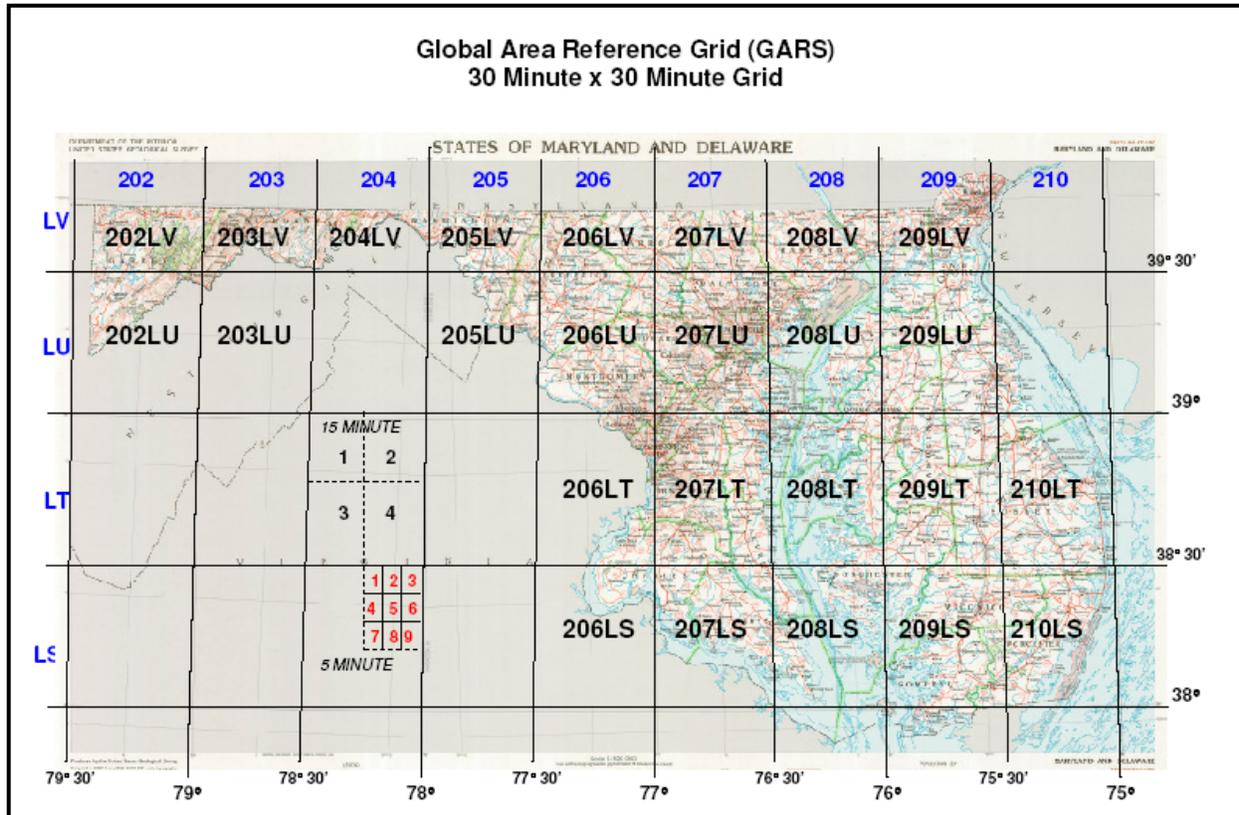


Figure 3-16-1: GARS



Geo-referencing matrix

A fundamental requirement for a geo-reference system is the ability to easily interface between the Incident Command, the land CISAR responder (or maritime CISAR responder) and the aeronautical CISAR responder. Because each has unique

geo-referencing requirements, effective interface between each component is vital to a successful CISAR response.

The geo-referencing matrix minimizes confusion and provides guidance on what geo-referencing system each CISAR responder should be using.

Map Datum

North American Datum 1983 (NAD 83) and World Geodetic System 1984 (WGS 84) are equivalent at scales smaller than 1:5000.

National SAR Committee
CISAR Geo-referencing Matrix

Georeference System User	United States National Grid (USNG)	Latitude/Longitude DD-MM.mm ¹	GARS ²
Land SAR Responder ³	Primary	Secondary	N/A
Aeronautical SAR Responders ⁴	Secondary	Primary	Tertiary
Air Space Deconfliction ⁵	N/A	Primary	N/A
Land SAR Responder/ Aeronautical SAR Responder Interface. ⁶	Primary	Secondary	N/A
Incident Command: Air SAR Coordination	Secondary	Primary	N/A
Land SAR Coordination	Primary	Secondary	N/A
Area organization and accountability ⁷	Secondary	Tertiary	Primary

¹ During CISAR operations (and to avoid confusion) Latitude and Longitude should be in one standard format: DD-MM.mm. If required, use up to 2 digits to the right of the decimal. If required, allow 3 digits in the degrees field for longitude (i.e., DDD-MM.mm). Do not use leading zeros to the left of the decimal for degrees or minutes that require fewer than the maximum number of possible digits to express their value. The minimum number of digits is always one, even if it is a zero. (Example: Recommended: 39° 36.6'N 76° 51.42'W; Not Recommended: 39° 36.600'N 076° 51.420'W).

² GARS: Global Area Reference System.

³ Land SAR responders use U.S. National Grid; however, a good familiarity with latitude and longitude is necessary to ensure effective interface between Land and Aeronautical SAR responders (Note: Land SAR includes SAR on flooded terrain).

⁴ Aeronautical SAR responders will use latitude and longitude for CISAR response. However, aeronautical SAR responders that work directly with Land SAR responders should understand the U.S. National Grid system for effective Land SAR/Aeronautical SAR interface.

⁵ Air space deconfliction will *only* be implemented and managed using Latitude and Longitude.

⁶ Aeronautical SAR responders working with Land SAR responders have the primary responsibility of coordinating SAR using USNG. However both groups must become familiar with both georeference systems.

⁷ Describes the requirement for providing situational awareness of CISAR operations geographically to Federal, military, state, local and tribal leadership.

Section 3-17: Handling of Animal Remains

Introduction

Health Risks from Animal Remains

Decomposing Animal Remains

References

Introduction

CISAR responders may come in contact with dying or dead animals. The cleanup of animal carcasses is not normally a primary responsibility of CISAR responders, but it is necessary to understand the risks associated with the handling of animal remains.

Many of the issues about human corpses directly correspond to those relating to animal corpses. Animals however, do spread a number of diseases among humans.

During lifesaving operations, the location of animal remains should be reported to the Incident Command to ensure appropriate authorities are notified for proper disposition.

Health Risks from Animal Remains

In most cases, the bodies of dead animals pose little risk to humans. Animal corpses constitute a public health hazard only in specific conditions. However, animals that have had a specific communicable disease, may pose a risk to humans.

Zoonoses¹ are becoming an increasing threat to human populations. However, most zoonotic infections do not survive in the dead body of an animal. Like diseases that survive in the human remains, zoonotic diseases

¹ Zoonose is any infectious disease that is able to be transmitted from animals, both wild and domestic, to humans or from humans to animals.

from animal carcasses must occur in an endemic area for that disease if they are to present any risk. If the area is not endemic for the disease, the probability of animal carcass-to-human transmission is very low.

Two situations exist in which an animal carcass can be a risk for humans:

- The presence of specific infectious agents; and
- The contamination of water by feces and discharge from lesions.

In the two above scenarios, there is still little risk to CISAR responders. A series of coexisting factors must be present for the animal bodies to constitute a risk for humans:

- First, the animal must be infected with a disease that can be transmitted to humans;
- Second, the germ must be able to survive the death of the host; and
- Third, the environment must facilitate the spread of the infectious agent (e.g., contaminated water).

Any interruption in this chain of events results in there being a minimal public health hazard. Moreover, the presence of animal carcasses alone should not be associated with the spread of infectious diseases.

Decomposing Animal Remains

There is only a short window of time for proper disposal of animal carcasses following their death. Within 7-10 days of death, animal carcasses become too decomposed to handle easily with disposal equipment such as front loaders.

Depending on the type of disaster and location, CISAR responders may encounter problems with decomposing animal carcasses as areas are searched for human survivors. Although animal corpses pose a minimal health risk, the proper disposal of animal remains is important after the initial response to the disaster.

References

The information in this Section was obtained from the following sources:

- Pan American Health Organization, *Management of Dead Bodies in Disaster Situations* (Washington D.C.: PAHO,);
- Dee B. Ellis, *Carcass Disposal Issues in Recent Disasters, Accepted Methods, and Suggested Plan to Mitigate Future Events* (Southwest Texas State University,).

Section 3-18: Handling of Human Remains

Introduction

Physical Health Risks from Human Remains

Direct Contact with Human Remains

Precautions When Handling Human Remains

References

Introduction

CISAR responder discovery of human remains is likely in large-scale incidents. A key principle in CISAR operations is to give priority to the living over the dead.

Human Remains and the CISAR Responder

In CISAR operations, if people are in distress and require assistance, the CISAR responder must make saving lives the priority. Notify the Incident Command of the location any human remains and continue CISAR operations.

Handling human remains may be subject to Agency specific guidance

Handling of Human Remains

CISAR responders may be required to handle human remains. Searching for and recovering bodies should be conducted according to applicable laws and regulations. The location of any remains should be reported to the Incident Command to ensure that the proper authorities are notified for recovery, identification and disposition.

SAR authorities may also need to have plans and agreements in place with other entities to handle human remains. Such arrangements should be part of State, Tribal, Territorial, and local emergency plans.

Physical Health Risks from Human Remains

Past disasters have demonstrated that the risk of epidemic disease transmission from human remains is negligible. Unless the affected population was already experiencing a disease suitable for epidemic development, a CISAR environment should not create such a situation. Most disaster victims die from traumatic events and not from pre-existing disease.

Typical pathogens in the human body normally die off when the host dies, although not immediately. Risk of transmission is no greater than that for routine handling of human remains. However, water supplies contaminated with decaying human remains can serve as a method of transmission of illnesses.

Direct Contact with Human Remains

Human remains may contain blood-borne viruses and bacteria. These viruses and bacteria do not pose a risk to someone walking nearby, nor do they cause significant environmental contamination.

In flood water, bacteria and viruses from human remains are a minor part of the overall contamination that can include uncontrolled sewage, a variety of soil and water organisms, and household and industrial chemicals. There are no additional

practices or precautions for floodwater related to human remains, beyond what is normally required for safe food and drinking water, standard hygiene, and first aid.

However, for people who must directly handle remains, such as CISAR responders in the course of conducting SAR operations and recovery personnel, there can be a risk of exposure to such viruses or bacteria.

Precautions When Handling Human Remains

CISAR responders who must handle human remains should use the following precautions:

- Protect your face from splashes of body fluids and fecal material. You can use a plastic face-shield or a combination of eye protection (indirectly vented safety goggles are a good choice if available; safety glasses provide only limited protection) and a surgical mask. In extreme situations, a cloth tied over the nose and mouth can be used to block splashes (be advised that a cloth can absorb splashes);
- Protect your hands from cuts, puncture wounds, or other injuries that might break the skin, and direct contact with body fluids. A combination of cut proof inner layer glove and a latex or similar outer layer is preferable. Wash your hands with soap and water or with an

alcohol-based hand cleaner immediately after you remove your gloves.

Appropriate footwear should similarly protect against sharp debris;

- Appropriate PPE should be worn during procedures that are likely to generate splashes of blood or other body fluids;
- Give prompt care, including immediate cleansing with soap and clean water. A tetanus booster should be provided to personnel when wounds are sustained during work with human remains; and
- Notify the Incident Command if exposed to hazardous conditions.

Table 3-18-1 on the next page summarizes the primary issues concerning handling of human remains.

References

The information in this Section was obtained from the following sources:

- U.S. Department of Health and Human Services, *Interim Health Recommendations for Workers who Handle Human Remains*; and
- World Health Organization, *Disposal of dead bodies in emergency situations*.
- Pan American Health Organization, *Management of Dead Bodies After Disasters: A Field Manual for First Responders* (Washington D.C.: PAHO).

Table 3-18-1: Human Remains: Infectious Disease Risks Summary

Overview	After most natural disasters there is fear that dead bodies will cause epidemics. However, human remains do not normally cause epidemics after natural disasters.
Infections and dead bodies	<p>At the time of death, victims are not likely to be sick with epidemic-causing infections (i.e., plague, cholera, typhoid, and anthrax). A few victims may have chronic blood infections (hepatitis or HIV), tuberculosis, or diarrheal disease.</p> <p>Most infectious organisms do not survive beyond 48 hours in a dead body. An exception is HIV which has been found six days postmortem.</p>
Risk	<p>Individuals handling human remains may have a small risk through contact with blood and feces (bodies often leak feces after death) from the following:</p> <ul style="list-style-type: none"> • Hepatitis B and C; • HIV; • Tuberculosis; and • Diarrheal disease. <p>Individuals working in hazardous environments (e.g., collapsed buildings and debris) and may also be at risk of injury and tetanus (transmitted via soil).</p>
Safety precautions	<p>Basic hygiene protects workers from exposure to diseases spread by blood and certain body fluids. Workers should use the following precautions:</p> <ul style="list-style-type: none"> • Use gloves and boots, if available; • Wash hands with soap and water after handling bodies and before eating; • Avoid wiping face or mouth with hands; • Wash and disinfect all equipment, clothes, and vehicles used for transportation of bodies; • Face masks are unnecessary, but should be provided if requested to avoid anxiety; and • The recovery of bodies from confined, unventilated spaces should be approached with caution. After several days of decomposition, potentially hazardous toxic gases can build-up. Time should be allowed for fresh air to ventilate confined spaces.

Section 3-19: Health and Safety

Introduction

Injury and Illness Prevention

Health and Safety Issues in Flooded Areas

Hepatitis

Excessive Noise

Mosquito Repellent

Hazardous Materials

Unstable Buildings and Structures

Wash Your Hands

Water Sanitation

Rubble and Debris

Hypothermia

Frostbite

Heat

Heat Stroke

Heat Exhaustion

Heat Cramps

Hydration

Introduction

This Section details several health and safety issues related to CISAR operations. CISAR responders should understand and plan for the various health and safety risks associated with a CISAR environment.

Through proper risk assessment and the use of an effective safety plan, personal injuries

and health risks can be more effectively mitigated.

CISAR responders who become sick or injured during operations should immediately contact the Incident Command to obtain medical assistance. Additional assistance can be received from ESF #8 (Public Health and Medical Services) personnel.

Injury and Illness Prevention

Potential injuries and illnesses outlined in this Section and other potential hazards that a CISAR responder may encounter can be effectively mitigated by using appropriate personal protective equipment (PPE) for the hazard or environment encountered. The review of the Incident Safety Plan and ICS 215A Incident Action Plan Safety Analysis which outlines potential hazards and associated mitigations will assist the CISAR responders in determining what hazards will be faced. Basic PPE equipment such as head (helmet), ear (ear plugs/muffs), hand (gloves), foot (boots), eye (safety glasses), flotation devices, and respiratory protection (dust mask or respirator) should be available and used by each CISAR responder.

Additional PPE may be required as dictated by the hazards that may be encountered in a particular CISAR environment.

Safety is paramount. Personal safety should always be your first concern; your co-worker should be your second concern; and the victim's safety third.

Decontamination processes and procedures should be considered for all CISAR responders and included in any safety and health plan.

Injuries and illnesses should be reported to your immediate supervisor, incident safety officer, or commander.

Health and Safety Issues in Flooded Areas

The danger of flood does not end when the water stops rising. CISAR responders must work together and look out for one another to ensure safety in flooded areas.

Floodwaters may contain fecal material from overflowing sewage systems, as well as agricultural and industrial byproducts. There is always a risk of disease from eating or

drinking anything contaminated with flood water.

Any open cuts, sores, or burns, no matter how minor, which can be exposed to contaminated flood water should be kept as clean as possible by washing with soap and clean water to control infection. If a wound develops redness, swelling, or drainage, seek immediate medical attention.

During CISAR operations, the risk of wounds may be increased. For this reason, CISAR responders should be sure they are up-to-date with tetanus vaccination, ideally before starting response operations. Being up-to-date for tetanus vaccine can greatly simplify the treatment for any wound that might occur.

Hepatitis

"Hepatitis" is an inflammation of the liver. Toxins, certain drugs, some diseases, heavy alcohol use, and bacterial and viral infections can cause hepatitis.

Hepatitis A is a liver disease caused by the hepatitis A virus (HAV). HAV infection produces a self-limited disease that does not result in chronic infection or chronic liver disease. The fecal-oral route primarily transmits HAV infection, by either person-to-person contact or through consumption of contaminated food or water.

Contaminated water in a flooded area may contain high amounts of raw sewage that has leached from septic systems and municipal wastewater treatment infrastructure.

Hepatitis A vaccination is the most effective measure to prevent HAV infection. Good decontamination procedures, as well as washing the hands, body, and equipment after flood water exposure will assist in preventing hepatitis A virus infection.

Excessive Noise

In CISAR operations excessive noise from equipment such as chain saws, backhoes,

tractors, pavement breakers, blowers, and dryers may cause ringing in the ears and possible subsequent hearing damage.

A good rule of thumb: If you must shout over noise to be heard, you should use agency approved hearing protection.

Proper hearing protection should be worn when operating equipment that causes excessive noise.

Mosquito Repellants

Prevent mosquito bites by wearing long pants, socks, and long-sleeved shirts. Use of an insect repellants is highly recommended.

Regardless of what insect repellent used, if you start to get mosquito bites reapply the repellent according to the label instructions or if possible, remove yourself from the area with biting insects.

The Environmental Protection Agency (EPA) recommends the following precautions when using insect repellents:

- Apply repellents only to exposed skin and/or clothing (as directed on the product label.). Do not use repellents under clothing;
- Never use repellents over cuts, wounds, or irritated skin;
- Do not apply repellants to eyes or mouth; and apply sparingly around ears. When using sprays, do not spray directly on the face. Spray on hands first and then apply to face;
- Do not allow children to handle the product. When using repellent on children, apply to your own hands first and then put on the child. You may not want to apply to children's hands;
- Use just enough repellent to cover exposed skin and/or clothing. Heavy application and saturation are generally unnecessary for effectiveness. If biting

insects do not respond to a thin film of repellent, apply more.

- After returning indoors, wash treated skin with soap and water or bathe. This is particularly important when repellents are used repeatedly in a day or on consecutive days. Also, wash treated clothing before wearing again (This precaution may vary with different repellents. Check the product label.); and
- If you get a rash or other bad reaction from an insect repellent, stop using the repellent, wash the repellent off with mild soap and water, and seek medical guidance. If you seek medical attention because of the repellent, take the repellent with you to show the doctor.

Hazardous Materials

Beware of hazardous materials. Wear protective clothing and gear when handling hazardous materials. Wash skin that may have come in contact with hazardous chemicals. Contact the Incident Command if you are not sure about hazardous materials you may come in contact with, or unsure of.

In flooded areas, be aware that the water may bury or move hazardous chemical containers of solvents or other industrial chemicals from their normal storage places.

If any compressed gas cylinders (e.g., 20-lb. tanks from a gas grill or household propane tanks) are discovered, do not attempt to move them by yourself. Compressed gas cylinders represent a very real danger of fire or explosion.

Unstable Buildings and Structures

CISAR responders will be checking homes for persons in distress or have injuries. Be aware that buildings may be unstable. Leave immediately if you hear shifting or unusual noises or see visual signs that signal a potential structure collapse.

Wash Your Hands

Finding running water to wash your hands may become difficult. However, keeping your hands clean helps avoid getting sick. It is best to wash your hands with soap and water for 20 seconds. However, when water is not available, you can use alcohol-based hand products made for washing hands (sanitizers).

Water Sanitation

In a CISAR environment, water may not be safe to drink, clean, or bathe in. During and after a disaster, water can become contaminated with bacteria, sewage, agricultural or industrial waste, chemicals, and other substances that can cause illness or death. The following information will help to ensure the water is safe to use:

- Use only bottled, boiled, or treated water for drinking, cooking or preparing food, washing dishes, cleaning, brushing your teeth, washing your hands, making ice, and bathing until your water supply is tested and found safe;
- If your water supply is limited, you can use an alcohol-based hand sanitizer for hand washing;
- If you use bottled water, be sure it came from a safe source (if unsure whether the water came from a safe source, boil or treat the water before use);
- Boiling water is the preferred way to kill harmful bacteria and parasites:
 - Bringing water to a rolling boil for 1 minute will kill most organisms;
 - Boiling will not remove chemical contaminants; and
 - If you suspect or are informed that water is contaminated with chemicals, seek another source of water, such as bottled water.
- If you can't boil water, treat water with chlorine tablets, iodine tablets, or unscented household chlorine bleach (5.25% sodium hypochlorite):
 - If chlorine or iodine tablets are used, follow the directions that come with the tablets;
 - If household chlorine bleach is used, add 1/8 teaspoon (~0.75 milliliter [mL]) of bleach per gallon of water if the water is clear;
 - For cloudy water, add 1/4 teaspoon (~1.50 mL) of bleach per gallon;
 - Mix the solution thoroughly and let it stand for about 30 minutes before using it; and
 - Treating water with chlorine tablets, iodine tablets, or liquid bleach will not kill many parasitic organisms; boiling is the best way to kill these organisms.
- Use water storage tanks and other types of containers with caution (e.g., fire truck storage tanks and previously used cans or bottles may be contaminated with microbes or chemicals);
- Water containers should be thoroughly cleaned, then rinsed with a bleach solution before use as per the following:
 - Mix soap and clean water in container; shake or stir to clean inside of container, then rinse;
 - For gallon- or liter-sized containers, add approximately 1 teaspoon (4.9 mL) household bleach (5.25%) with 1 cup (240 mL) water to make a bleach solution;
 - Cover the container and shake the bleach solution thoroughly, allowing it to contact all inside surfaces; and

- Cover and let stand for 30 minutes, then rinse with clean water.
- Practice basic hygiene:
 - Wash hands with soap and bottled water or warm water that has been boiled or disinfected;
 - Wash hands before preparing food or eating, after toilet use, after participating in clean-up activities, and after handling articles contaminated with floodwater or sewage; and
 - Use an alcohol-based hand sanitizer to wash hands if you have a limited supply of clean water.

Rubble and Debris

Whether natural or manmade, CISAR responders will encounter significant rubble and debris that may require digging through while looking for survivors.

Caution must be considered in shifting, unstable, or overhead rubble which can cause strains, sprains, or other injuries.

Rubble piles are particularly hazardous because there are no tie-off points to secure safety ropes and harnesses. This becomes problematic when looking for survivors in the midst of rubble and debris.

CISAR responders normally have limited heavy construction equipment for rubble and debris removal. This type of equipment can present hazards to personnel, as well as to the equipment operators who may have to work in very tight quarters, uneven spaces, and poor visibility.

Use teams of two or more people to move bulky objects. One person should avoid lifting any material that weighs more than 50 pounds (per person).

Hypothermia

When exposed to cold temperatures, the body begins to lose heat faster than can be produced. The result is hypothermia, or abnormally low body temperature. Body temperature that is too low affects the brain, making the victim unable to think clearly or move well. Hypothermia is particularly dangerous because a person may not know when it occurs.

Hypothermia occurs most commonly at very cold environmental temperatures, but can occur even at cool temperatures (above 40°F) if a person becomes chilled from rain, sweat, or submersion in cold water. Hypothermia warning signs include the following

Adults:

- Shivering/exhaustion;
- Confusion/fumbling hands;
- Memory loss/slurred speech; and
- Drowsiness.

Infants:

- Bright red, cold skin; and
- Very low energy.

Hypothermia: What to do

If signs of hypothermia are noticed, take the person's temperature. If below 95°, the situation is considered a medical emergency. If medical care is not available, begin warming the person, as follows:

- Place the victim in a warm room or shelter;
- Remove wet clothing;
- Warm the center of the body first - chest, neck, head, and groin. If necessary, use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets;
- Warm beverages can help increase the body temperature. Do not give alcoholic

beverages. Do not try to give beverages to an unconscious person;

- After the victim's body temperature has increased, keep the person dry and wrapped in a warm blanket, including the head and neck; and
- Get medical attention as soon as possible.

A person with severe hypothermia may be unconscious, may not seem to have a pulse, or to be breathing. In this case, handle the victim gently, and get emergency assistance immediately. Even if the victim appears dead, CPR should be provided. CPR should continue while the victim is being warmed, until the victim responds, or medical aid becomes available. Hypothermia victims who appear to be dead could possibly be resuscitated successfully.

Frostbite

Frostbite is an injury to the body caused by freezing and leads to a loss of feeling and color in affected areas. Frostbite most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage the body; severe cases can lead to amputation.

At the first signs of redness or pain in any skin area, protect exposed skin and if possible, get out of the cold. Any of the following signs may indicate frostbite:

- White or grayish-yellow skin area;
- Skin that feels unusually firm or waxy; and
- Numbness.

The signs of frostbite are often not recognized by the individual. If symptoms are detected, seek medical care.

Because frostbite and hypothermia both result from exposure, first determine whether the victim also shows signs of hypothermia. Hypothermia is a more serious medical

condition and requires emergency medical assistance.

Frostbite: What to do

If there is frostbite but no sign of hypothermia and immediate medical care is not available, proceed as follows:

- Place victim in a warm area as soon as possible;
- Unless absolutely necessary, do not walk on frostbitten feet or toes. This may increase frostbite damage;
- Immerse the affected area in warm - not hot - water (the temperature should be comfortable to the touch for unaffected parts of the body). Or, warm the affected area using body heat (e.g., the heat of an armpit can be used to warm frostbitten fingers);
- Do not rub with snow or massage the frostbitten area. This can cause more damage; and
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

Heat

CISAR responders must be aware of the potential for heat problems. Even short periods of high temperatures can cause serious health problems. Depending on the type of incident, a high-heat environment can tax the stamina of CISAR responders, who may be suited up in heavy protective garments and may work for long periods without breaks or equipment changes.

A discussion of heat stroke, heat exhaustion, and heat cramps follows.

Heat Stroke

Heat stroke occurs when the body is unable to regulate its temperature. The body's temperature rises rapidly, the sweating

mechanism fails, and the body is unable to cool down. Body temperature may rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not provided. Heat stroke becomes even more of a problem when medical facilities are not readily available during CISAR operations.

Recognizing Heat Stroke

Warning signs of heat stroke vary, but may include the following:

- An extremely high body temperature (above 103°F, orally);
- Red, hot, and dry skin (no sweating);
- Rapid, strong pulse;
- Throbbing headache;
- Dizziness;
- Nausea;
- Confusion; and
- Unconsciousness.

Heat Stroke: What to do

If the signs of heat stroke are observed, a life-threatening emergency may be occurring. Have someone call for immediate medical assistance, begin cooling the victim, and do the following:

- Get victim to a shady area;
- Cool the victim using whatever methods you can;
- Monitor body temperature, and continue cooling efforts until the body temperature drops to 101-102°F;
- If emergency medical personnel or a medical evacuation is delayed, call the Incident Command for further instructions;
- Do not give the victim fluids to drink; and

- Get medical assistance as soon as possible.

Sometimes a victim's muscles may begin to twitch uncontrollably as a result of heat stroke. If this happens, keep the victim from injuring himself, but do not place any object in the mouth and do not give fluids. If there is vomiting, make sure the airway remains open by turning the victim on his or her side.

Heat Exhaustion

Heat exhaustion is a milder form of heat-related illness that can develop after several days of exposure to high temperatures and inadequate or unbalanced replacement of fluids. It is the body's response to an excessive loss of water and salt contained in sweat.

Recognizing Heat Exhaustion

Warning signs of heat exhaustion include the following:

- Heavy sweating;
- Paleness;
- Muscle cramps;
- Tiredness;
- Weakness;
- Dizziness;
- Headache;
- Nausea or vomiting; and
- Fainting.

The skin may be cool and moist. The victim's pulse rate will be fast and weak, and breathing will be fast and shallow. If heat exhaustion is untreated, it may progress to heat stroke. Seek medical attention immediately if any of the following occurs:

- Symptoms are severe; and
- The victim has heart problems or high blood pressure.

Heat Exhaustion: What to do

Cooling measures that may be effective include the following:

- Provide cool, nonalcoholic beverages;
- Rest;
- Cool shower, bath, or sponge bath;
- An air-conditioned environment; and
- Lightweight clothing.

Heat Cramps

Heat cramps usually affect people who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture. The low salt level in the muscles may be the cause of heat cramps. Heat cramps may also be a symptom of heat exhaustion.

Recognizing Heat Cramps

Heat cramps are muscle pains or spasms – usually in the abdomen, arms, or legs – that may occur in association with heavy activity. If you have heart problems or are on a low-sodium diet, get medical attention for heat cramps.

Heat Cramps: What to do

If medical attention is not necessary, take these steps:

- Stop all activity, and sit quietly in a cool place;
- Drink clear juice or sports beverage;
- Do not return to strenuous activity for a few hours after the cramps subside, because further exertion may lead to heat exhaustion or heat stroke; and
- Seek medical attention for heat cramps if they do not subside in one hour.

Hydration

CISAR responders must ensure they receive the necessary fluids during rescue operations. Generally, personnel recover more quickly

by carefully choosing fluids and liquids after exertion to replace fluids and replenish glycogen.

(Note: Personnel should avoid alcoholic beverages prior to intense activity and appropriate amount of rest/sleep should be obtained.)

Recovery Fluids

- Hydration is optimized by drinking to quench thirst and then drinking additional fluids (as a guide, personnel should consume 150% of ounces of weight/fluid lost during activity);
- Sports drinks and carbohydrate-containing beverages replenish glycogen in the muscles and improve rate of absorption of water and sodium; and
- Full fluid replacement may take as long as 24 to 48 hours following strenuous activity.
- Cool water is quickly absorbed and an excellent choice for fluid replacement;
- All participants should consume a minimum of 0.5 liters of water per hour of activity (water with sports drink additive should be rotated every other bottle);
- Careful attention should be made to avoid over hydration. Decrease consumption when activity decreases; and
- Solid foods containing carbohydrates should be consumed at least one hour before activity (allows time for absorption and prevents nausea);

References

The information in this Section was obtained from the following sources:

- Centers for Disease Control and Prevention, *Worker Safety After a Flood*;
- Centers for Disease Control and Prevention, *Floods: Sanitation and Hygiene*;
- Centers for Disease Control and Prevention, *Updated Information regarding Mosquito Repellants Fact Sheet*;
- Centers for Disease Control and Prevention, *Key Facts about Hurricanes and Flood Recovery: Protect Your Health and Safety After a Hurricane or Flood*;
- Centers for Disease Control and Prevention, *Clean Hands Save Lives: Emergency Situations*;
- Centers for Disease Control and Prevention, *After a Flood*;
- Centers for Disease Control and Prevention, *Keep Food and Water Safe after a Natural Disaster or Power Outage*; and
- Centers for Disease Control and Prevention, *Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety*.
- International Fire Service Training Association, *Fire Department Safety Officer*,
- National Fire Protection Association, *NFPA 1521 Standard for Fire Department Safety Officer*.

Section 3-20: Media and Public Relations

Introduction

Relationships

NIMS Public Information Guidance

Public Information Officer (PIO)

Joint Information Center (JIC)

Media On Scene

Introduction

During CISAR operations, the public and media should be informed, within the limits of confidentiality, of ongoing CISAR operations. Some potential benefits of early release of information include:

- The possibility to obtain additional, useful information from the public to enable more effective use of CISAR resources;
- Fewer time-consuming requests from the news media; and
- Reduction in inaccurate public speculation about ongoing operations.

A CISAR operation often creates great interest with the general public and with radio, television, and newspapers.

IAMSAR Manual (Volume 2) and FEMA's NIMS training have considerable information relevant to media and public relations for CISAR responders. This information can help enhance media and public relations effectiveness and avoid troublesome mistakes.

Relationships

SAR-related contacts with media, which can take many forms, are normally the responsibility of managers, public affairs specialist, or assigned to a Joint Information Center (JIC). It is important to establish a good relationship between the media and response authority to ensure that information reaching the public is factual and complete. This relationship should be established prior to any major incident. The responsible CISAR authority should partner with the media to communicate the overarching message, services provided, and impact on the community.

Release of names to the media can be a sensitive issue. Names of casualties should not be released until every effort has been made to contact family relatives. Until the relatives have been notified, normally only the number of deceased, survivors, and injured survivors should be released. Names of military casualties should be released only by the military service to which the casualties belong. Names of survivors should not be released until positive identification has been accomplished.

The SMC should be aware of the concerns of the relatives of missing persons. Waiting during searches and lack of information can be stressful for family members of those in distress. During the search, the SMC or staff should maintain regular contact with relatives to provide information and outline future plans. If possible, contact telephone numbers should be issued for relatives. These steps assist the relatives in accepting the SMC's decision to conclude CISAR operations even if the missing persons are not located.

Ensure that the media knows who is in charge of coordinating CISAR operations.

NIMS Public Information Guidance

In NIMS, the Public Information Officer (PIO) and the Joint Information Center (JIC) help the Incident Command and SMC manage the flow of public information.

Public Information Officer (PIO)

The PIO is a key member of the command staff. The PIO advises the Incident Command on public information matters related to the management of the incident, including media and public inquiries, emergency public information and warnings, rumor monitoring and control, media monitoring, and other functions required to coordinate, clear with proper authorities, and disseminate accurate and timely information related to the incident. The PIO ensures that decision makers and the public are fully informed throughout a domestic incident response.

Joint Information Center (JIC)

Establishment of a JIC is an effective means of disseminating public information. Using the JIC as a central location, CISAR information can be coordinated and integrated between the CISAR response organizations. Prompt establishment of a JIC away from the SMC will help to achieve this goal. The JIC can establish proper procedures for releasing information to the public and how the information will be released. Since the information may be sensitive, it is critical that everyone communicates the same information.

Media On Scene

The media is a 24-hour global market, with news broadcast worldwide. The media will find a way to get to the scene for first hand information, pictures, and video. By providing media transportation to the scene, safety can be improved and the media can be more effectively informed and supported.

Section 3-21: Operational Messages

Situation Reports (SITREPS)

Search Action Plans (SAPs)

Rescue Action Plans (RAPs)

Five-line Brief

CISAR operations messages include Situation Reports (SITREPs), Search Action Plans (SAPs), and Rescue Action Plans (RAPs). These messages should be unclassified, in plain language, and require no key to interpret. A standard sample message file, or computer templates and programs, should be established to aid in quickly drafting and releasing the types of messages used regularly.

Situation Reports (SITREPS)

SITREPs are reports from the OSC to the SMC, or SMC to interested agencies that provide information on current conditions and mission progress. The OSC sends SITREPs to the SMC (unless otherwise directed) to keep the SMC informed of on scene mission progress and conditions. The SMC uses SITREPs to keep superiors, the Incident Commander, and any other interested agencies informed of mission progress. For cases where other threats or non-SAR operations exist on scene, other appropriate agencies should be information addressees on all SITREPs.

Often a short SITREP is used to provide prompt information and urgent details. A more complete SITREP is used to pass amplifying information.

Initial SITREPs should be transmitted as soon as details of an incident become clear enough to confirm the need for SAR

involvement, and should not be delayed unnecessarily for confirmation of all details. Further SITREPs should be issued as soon as other relevant information is obtained. Information already passed should not be repeated. During prolonged operations, the IC may decide to require "no change" SITREPs be submitted at intervals of about three hours to reassure recipients that nothing has been missed and that the unit remains operational. When the on scene response has been completed, a final SITREP should be issued.

More information on SITREPs and their contents, including sample formats, is available in the IAMSAR Manual (Volume 2); however, SAR agencies may have their own formats.

Search Action Plans (SAPs)

The SMC should develop a SAP and a Rescue Action Plan (RAP) as appropriate. In some situations these plans may be combined and promulgated in one message.

After a SAP is developed, it is provided to the OSC and CISAR responders on scene in a search action message (or other applicable format). The message should include:

- A summary of the on scene situation, including the nature of the emergency;
- Areas to be searched;
- What to search for (search object(s));

- Detailed search instructions;
- Weather information;
- Summary of SAR facilities on scene;
- A listing of the appropriately-described search area(s) and sub-areas that can be searched by the SAR facilities in the allotted time;
- On land or flooded areas, geo-referencing grids may be added to designate positions; and
- The assignment of communications frequencies to include primary and secondary control channels, on scene, monitor and press channels, and special radio procedures, schedules, or relevant communication factors.

It is better to release the SAP early. If a “first light” search is being planned; parent agencies providing CISAR responders should typically receive the SAP at least six hours before departure time if practicable, bearing in mind that the SAP can be expanded or amended later.

Rescue Action Plans (RAPs)

In conjunction with the SAP and if required, the SMC may then develop a RAP. It is provided to the OSC and CISAR responders on scene. The RAP is similar to the SAP, but with search instructions replaced with rescue directions.

Five-Line Brief

For large-scale CISAR operations, air rescue support can be reported by the OSC or the OSC’s supporting Aircraft Coordinator using a succinct five-line briefing. The five line briefing (Table 3-21-1 below) is a voice data message that contains the following information:

Table 3-21-1: Five Line Brief
Number of persons for rescue
Conditions of persons (ambulatory, non-ambulatory, etc.)
Location: Latitude/Longitude (DD MM.MM/DDD MM.MM)
Type of pickup and device to be used (hoist, land, etc.)
Hazards identified in area/amplifying information

Example 5-line radio call:

Air Blue 8, Rover 3

Line 1: 6 passengers

Line 2: non-ambulatory

Line 3: 36°01.33’N / 114°43.45’W

(State as: “Three six degrees, zero one decimal three three minutes North / one one four degrees, four three decimal four five minutes West”)

Line 4: hoist with litter

Line 5: large 150 foot tower to the south

Section 3-22: Persons with Special Needs

Vulnerability and Risks

Assistance

Special Response Teams

Vulnerability and Risks

Survivors sometimes have special needs or pose special risks.

A person at home alone is often a potential "victim of circumstance," especially if they are elderly or disabled. Distress situations can be worsened by an injurious fall, heart attack, withdrawal symptoms, robbery or bodily attack, or fear of death. Such people may be in a serious predicament and may be forced to just "lay there" until someone happens to show-up to check on or discover them. Health problems can be aggravated by stress or environmental conditions. An injured person who is alone may not be able to call for help and therefore may be among the last persons found during search operations.

Other special needs persons may need to be rescued from facilities such as hospitals, nursing homes or schools.

Prisoners may pose special risks and require continuity of custody.

Assistance

CISAR responders should be diligent to look for persons who may be unable to help themselves or even to call for help. When

people with special needs are located, they should be carefully assessed to ensure their situation is not worsened.

CISAR responders should:

- Be sensitive and reassuring;
- Handle person(s) with special needs with extra care;
- Be alert to taking important medicines or service animals (see Section 3-3: Animals);
- Alert lily pad or place-of-safety personnel of special medical or other immediate needs of the person(s) rescued; and
- Help the person contact a loved one or care provider who may be able to provide appropriate supplemental information or assistance if necessary.

Special skills or equipment may be needed to assist some special needs persons, and large numbers of occupants of institutions such as hospitals or nursing homes may require special mass rescue assistance.

Some possible medical challenges for CISAR responders are identified in Table 3-22-1 on the next page.

Table 3-22-1: Special Needs Challenges for CISAR Responders

Disability/Special Need	Challenge to the CISAR Responder
Visually impaired	Persons who are visually impaired may be reluctant to leave familiar surroundings. A guide dog could become confused or disoriented in a disaster. People who are blind or partially sighted may have to depend on others to lead them, as well as their dog, to safety during a disaster (see Section on Animal Rescue).
Hearing impaired	May present difficulty in understanding instructions.
Mobility impaired	May require special assistance.
Non-English speaking persons	May present difficulty in understanding instructions.
People with medical conditions	Must learn if a victim has one or more medical conditions (i.e. victim dependent on dialysis machine, other life-sustaining equipment or treatment).
People with mental retardation/dementia	May present significant problems when attempting rescue; CISAR responders teaming with proper medical support may be the best option.

(Note: Table modified from original; found at: <http://www.fema.gov/plan/prepare/specialplans.shtm>.)

Special Response Teams

SRTs may be used to support evacuations of large or small numbers of persons with special needs, usually early in the CISAR operation, or persons who require special handling, such as prisoners. Before the event, State, Tribal, Territorial, or local emergency managers should have already identified and prioritized institutions and locations for which SRTs will be needed.

Rescue of persons from institutions such as hospitals or nursing homes should be coordinated as closely as possible with responsible local medical and care providers and planners. Many of these victims may need to be rescued in wheelchairs or even in prone positions, and may have life support equipment that must also be evacuated.

SRTs may also be needed to respond to enclaves of non-English speaking survivors.

For impending distress situations (e.g. hurricanes) where there is advance notice and reasonable certainty that a facility will need to be evacuated, partial or whole pre-event evacuations may be prudent.

Assigned resources should report conditions and resource needs to the Incident Command as soon as that information is available.

Persons rescued from facilities such as nursing homes, hospitals, or prisons may need to be transported to other comparable facilities either directly, or after they arrive at a lily pad or place of safety.

Section 3-23: Structural Marking Systems

Objective

FEMA Building Marking System

United Nations Marking System

Objective

Federal, State, Tribal, Territorial, and local, CISAR responders must have a uniform, standardized system for marking buildings or other structures to indicate the search status. Having a common search marking system reduces the possibility of redundant searches.

Markings will be made with orange paint, black markers or lumber crayons. For wide area searches, a peel and stick form available from FEMA US&R can be used.

The IC can choose one of two available structural marking systems, depending on the needs of the particular situation. Both systems are simple and effective.

FEMA Building Marking System

In the United States, the FEMA building marking system is used. Markings are placed on the front of searched structures as per Figures 3-23-1, 3-23-2, and 3-23-3 below and on the next page.

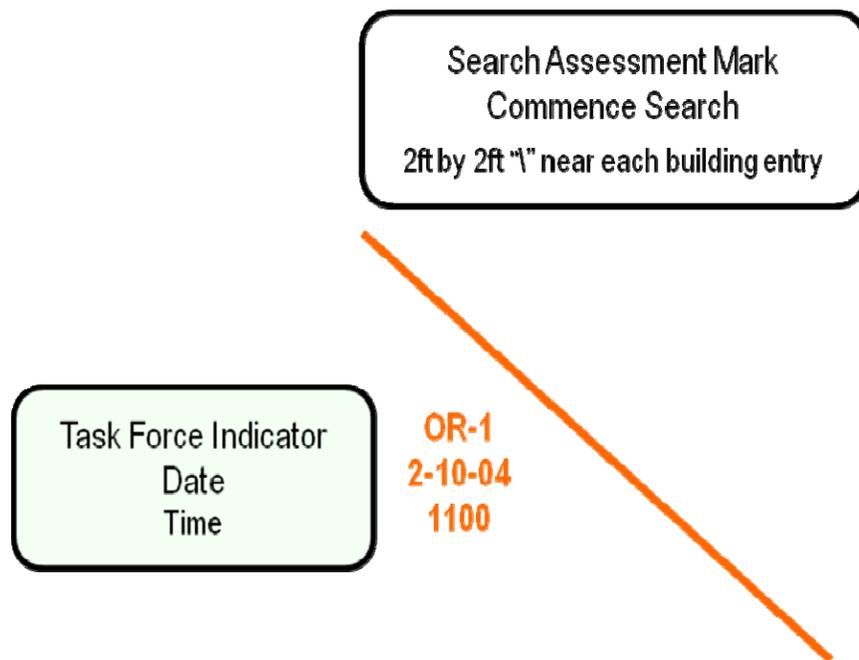


Figure 3-23-1: FEMA Building Marking System (Commence Search)

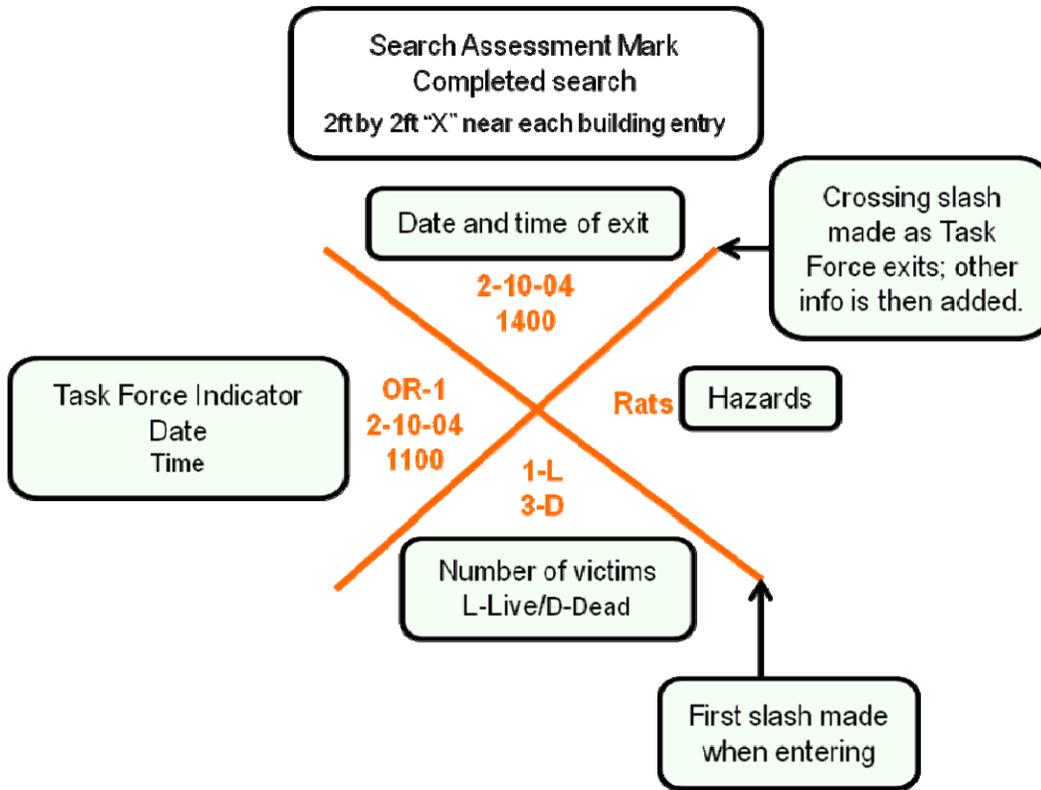


Figure 3-23-2: FEMA Building Marking System (Completed Search)

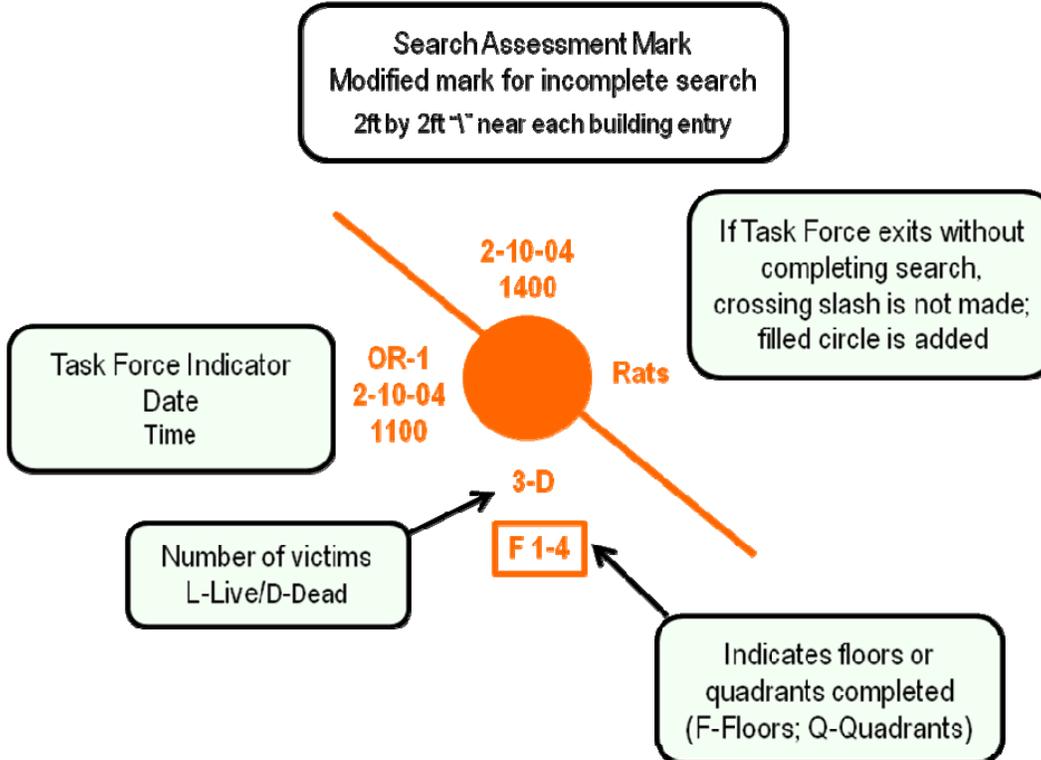


Figure 3-23-3: FEMA Building Marking System (Modified Mark-Incomplete Search)

United Nations Marking System

Outside of the United States, the United Nations International Search and Rescue Advisory Group (INSARAG) searched building marking system is used. The INSARAG system is explained below and depicted in Figure 3-23-4.

- A one meter by one meter square with G or N (for go or no-go), the team conducting the search, the date and time of the start of the search, and the date and time of the completion of the search written inside.
- The number of live victims removed is written to the left of the square. The

number of dead victims removed is written to the right of the square. Persons unaccounted for and/or location of other victims is written below the square.

- Additional information on hazards pertaining to the structure is written above the square.
- Any reference to building floor numbers use ground as G, 1 as the first floor above G, B1 as the first floor below G, and so forth. This is contrasted with US floor numbering that starts with 1 as the ground level.
- INSARAG marking squares are usually written in day-glow orange.

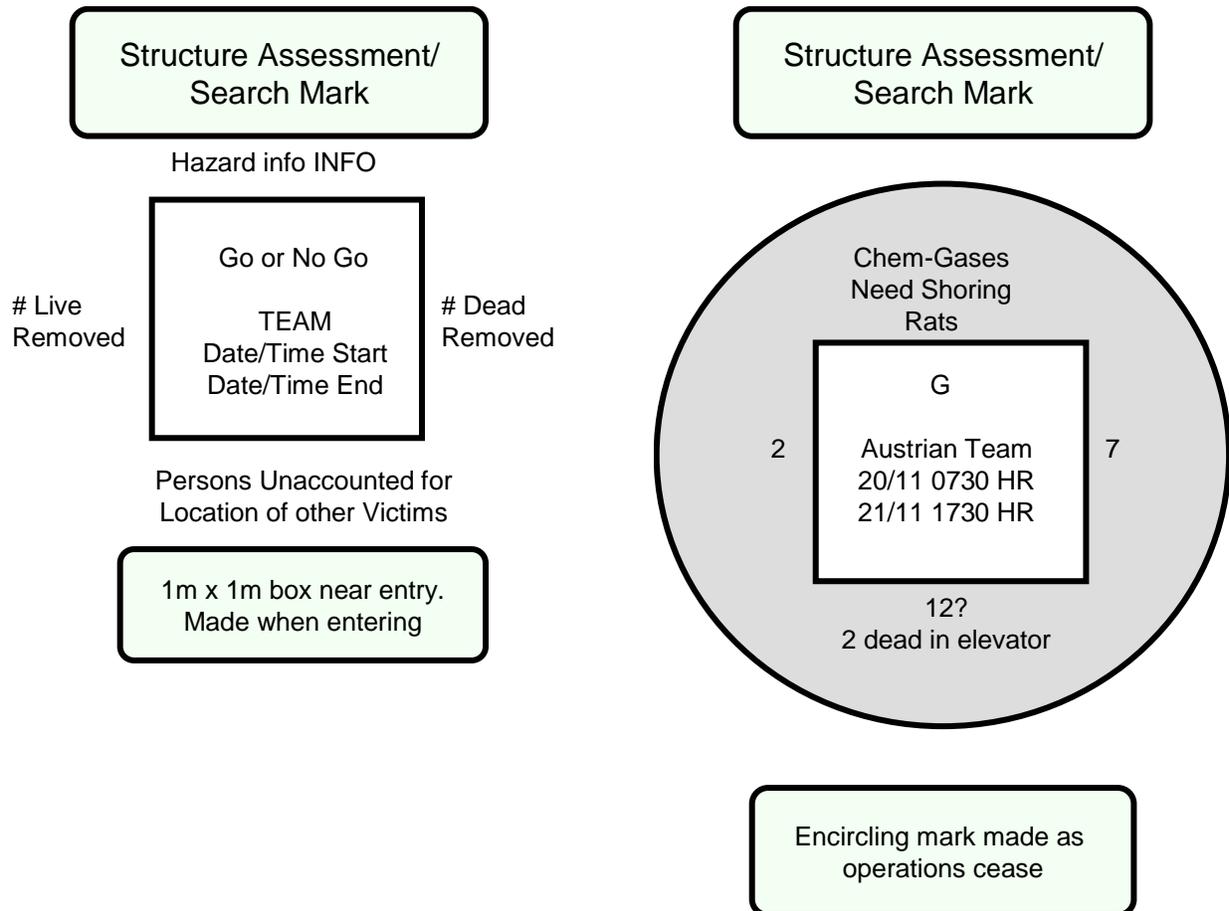


Figure 3-23-4: INSARAG Building Marking System

Section 3-24: Traumatic Stress and Children

Vulnerability

Signs of Trouble in Children

Helping Children Cope

Vulnerability

Children can be especially vulnerable to stress following a disaster - particularly if they witnessed their home under water, spent nights in a shelter, changed schools, lost a pet, or had their normal routines interrupted. Many Children can feel very frightened during a disaster; afterwards some children may show temporary changes of behavior.

For most children these changes will be mild, not long lasting, and diminish with time. However, reminders of what happened could cause upsetting feelings to return and behavior changes to emerge again. Watching scenes of the disaster on television can be distressing for children, especially for younger children.

Some children are more vulnerable, and their reactions can be more severe and last for a longer period of time.

The following factors can contribute to a child's sense of greater vulnerability:

- *Direct exposure to the disaster.* This includes being evacuated, seeing injured or dying people, being injured themselves, and feeling that their own lives are threatened.
- *Personal loss.* This includes the death or serious injury of a family member, close friend, or family pet.
- *On-going stress from the secondary effects of disaster.* This includes

temporarily living elsewhere, losing contact with friends and neighbors, losing things that are important to them, parental job loss, and the financial costs of reestablishing their previous living conditions.

- *Prior exposure to disaster or other traumatic event.*

Children's reactions to catastrophic incidents and their aftermath are strongly influenced by how adults around them cope with what's happening. Children turn to these adults for information, comfort, and help.¹

Signs of Trouble in Children

CISAR responders should be aware of the following signs that children may display:

- *Children ages 6 or younger* may cry more than usual, become clingy, and have nightmares, show excessive fear of the dark, fear of animals or fear of being alone. Appetites may change. They may speak with difficulty or revert to behaviors such as thumb-sucking.
- *Children ages 7 to 10* can understand the permanence of loss. These children may exhibit increased irritability, aggression, and competition for parental attention. Some become preoccupied with the disaster and want to talk about it continually. They may also show anxiety

¹ FEMA and American Red Cross, *Helping Children Cope with Disaster*, article online at: <http://www.fema.gov/pdf/library/children.pdf>.

through whining and withdrawing from their peers and normal activities.

- *Teenagers 11 to 18* may show outright rebellion, physical problems and may engage in risk-taking behaviors.

Helping Children Cope

Subject to parental involvement and permission, and if available, CISAR responders can help children cope by:

- Spending time with them;
- Encouraging children to talk about their feelings concerning what's happening and encourage them to ask questions;
- Helping children understand what causes their anxieties and fears, recognize their losses (such as pets and toys), and reassuring them;
- Keeping children informed about what is going on; and
- Holding and hugging them.

Section 3-25: Traumatic Stress Reactions

Introduction

Normal Reaction to Disasters

Stress Management Program Common Characteristics

Organizational Approaches for Stress Prevention and Management

International Critical Incident Stress Foundation (ICISF)

Criteria for Disaster Crisis Teams

Services Offered by Staff Support Teams

Individual Approaches for Stress Management and Prevention

References

Introduction

CISAR operations can be challenging, interesting, rewarding, and a source of personal and professional growth. There may be a dark side, however, if the stress associated with a CISAR operation is prolonged, extreme, or not resolved within a reasonable amount of time (usually about three to four weeks) after the operation.

Stress is a normal and natural state of elevated arousal in response to a stimulus. The greater the stimulus, the stronger will be the response. A heightened level of arousal alters the way we think or feel and it can have significant effects on our bodies and behaviors. At low to moderate levels of arousal, stress reactions are not harmful and can help us function safely and effectively. In extreme stress, deterioration in performance and physical and mental health is often the result.

Catastrophic incidents exert extraordinary demands on emergency response personnel. CISAR responders may be exposed to

traumatic operations that can involve the treatment of severely injured children or adults, gory sights and disturbing sounds, the handling of dead bodies or body parts, or even the injury or death of colleagues. The long hours, intensity of operational demands, ambiguous roles, and exposure to human suffering can adversely affect even the most experienced professionals.

CISAR responders and managers identifying or experiencing symptoms associated with stress should consult Agency specific guidance. In addition, the Incident Command should be contacted to ensure ESF #8 (Public Health and Medical Services) personnel are notified, and the information contained in this Section is reviewed.

Normal Reactions to Disasters

Traumatic stress reactions to disaster begin as normal responses. Operations personnel often feel sadness, anger, and grief. Often, the need for rest is denied and they resist

leaving the scene. Unresolved stress reactions are the source of future problems.

Too often, the stress experienced by CISAR responders is addressed as an afterthought. This approach is a formula for failure of supervisors and personnel to adequately manage traumatic stress. It virtually guarantees unnecessary stress-related suffering. It threatens unit cohesion and performance among emergency services personnel.

Stress Management Program Common Characteristics

The evidence thus far indicates that the very best stress management programs have all of the following characteristics:

- Comprehensive;
- Integrative;
- Systematic; and
- Multi-component.

A *comprehensive program* has elements in place before a traumatic event occurs, provides support during an incident, and offers a variety of services after the situation over.

An *integrative program* has elements that are strategically blended together and interrelated. This approach assures that the right support services are in place for the right target populations, at the best possible times, and that the people most likely to be successful in assisting emergency personnel provide these services.

A *systematic program* provides support services in a logical, sequential order. Simple, easy to apply services, such as, resting and feeding personnel, are usually quite effective in the early stages of a crisis. More complex interventions may be necessary if the traumatic stress reaction does not resolve in a reasonable time.

A *multi-component program* is one that has many interventions or “tools” available to trained crisis intervention personnel to support people engaged in emergency operations.

Fortunately, steps can be taken to minimize the effects of traumatic stress before and after it occurs. Stress prevention and management comprises two critical elements: 1) *organization* and 2) *individual*. Adopting a preventive perspective allows both workers and organizations to anticipate stressors and shape responses, rather than simply reacting to a crisis when it occurs.

Organizational Approaches for Stress Prevention and Management

What follows are several practical steps that can be taken organizationally to minimize the effects of traumatic stress:

- Provide effective stress management structure and leadership. Elements include:
 - Policies and procedures to provide staff support services for the organization’s personnel before, during, and after traumatic events;
 - Clear chain of command and reporting relationships;
 - Available and accessible supervisors;
 - Disaster training for all responders;
 - Access to a specially trained staff support team, including peer support personnel, during operations;
 - Incorporate a staff support team into the incident command structure; and
 - Place a staff support officer within the command post to coordinate psychological support functions.
- Shifts of no longer than 12 hours, followed by 12 hours off. Typically a two-hour work period is followed by a

half hour down time. Intense cold or heat or the intensity of the scene itself may cause alterations in the deployment cycles;

- Periodically orient work crews to time;
- Briefings at the beginning of shifts as CISAR responders enter the operation;
- Disengage unnecessary personnel;
- Provide logistical support; and
- Communication tools (e.g, cell phones, radios, etc.).
- Provide education and information on critical incidents, critical incident stress and the traumatic stress response. People who are informed become more stress, resistant and are better able to manage critical incident stress when it strikes;
- Establish a well-trained staff support team and make sure it is trained to provide a variety of services to individuals and groups under different circumstances;
- Mobilize staff support services early in an operation;
- Define clear operational purpose and goals for each unit;
- Define clear strategies and tactics appropriate to assignment setting;
- Define operational roles by function;
- Nurture team support of one another;
- Create a buddy system to support and monitor stress reactions. Promote a positive atmosphere of support and tolerance with frequent praise; and
- Develop a plan for stress management:
 - Assess CISAR responders' functioning regularly;

- Rotate workers between low-, mid-, and high-stress tasks;
- Encourage breaks and time away from assignment;
- Educate personnel about signs and symptoms of worker stress and coping strategies;
- Provide individual support;
- Provide immediate small group support (defusing) as required;
- Provide Critical Incident Stress Debriefing at appropriate times after the incident; and
- Develop an exit plan for CISAR responders leaving the operation, including an operations debriefing, stress support if necessary, re-entry information, opportunity to critique, and formal recognition for service.

International Critical Incident Stress Foundation (ICISF)

The ICISF, a non-profit organization recognized by the United Nations, coordinates a network of over 1,000 specially trained teams to provide support to emergency personnel. Each team has several mental health professionals who are familiar with the psychological needs of emergency personnel. The most important element of the team, however, is the use of peer support personnel who connect most with the operations personnel. Teams function as partnerships between mental health professionals and firefighters, police officers, emergency medical, and SAR peers. ICISF operates a 24-hour emergency hotline that can be a good source of emergency consultations and the deployment of crisis support teams to a traumatic event. Service fees are not charged to emergency services organizations, although assistance with expenses is usually

expected. The 24-hour emergency contact number is: (410) 313-2473.

Free, down loadable disaster-related resource materials are located on the ICISF website: www.icisf.org.

Criteria for Disaster Crisis Teams

Support teams deployed to assist in a disaster should fulfill at least the following minimum criteria:

- Between 40 and 70 hours (minimum) training in crisis intervention for individuals and groups;
- A mental health professional as the team's clinical director;
- Trained peer support personnel;
- Assessment skills;
- Strategic planning skills;
- Staff support skills for individuals;
- Staff support skills for large groups;
- Staff support skills for small groups;
- Capacity to support emergency services significant others; and
- Follow-up and referral skills.

Services Offered by Staff Support Teams

Staff support teams offer a wide range of services to emergency personnel. They help to build stress resistance ("stress immunization") and enhance resiliency ("bounce back" capacity) by means of pre-incident education and stress management preparation.

Staff support teams assess both the severity of the incident and the intensity of the traumatic stress reactions in the personnel. They then develop an appropriate strategy to provide the best support services. A strategic

approach to traumatic stress management should include the five 'Ts':

Target: Who requires support?

Type: What types of interventions?

Timing: When is the best time to provide assistance?

Theme: What key issues, concerns or circumstances need to be considered before a stress team takes action?

Team: Who would be the best people to provide the support services?

During a CISAR operation, the staff support team provides:

- Consultations to command personnel;
- Information updates;
- Individual crisis intervention; and
- Rest, Information, and Transition Sessions (RITS);

Individual support continues after a situation ends. Group support sessions such as, Critical Incident Stress Debriefings, may be held according to the needs of the various groups who worked the disaster. The primary aim of group sessions is to restore *group cohesion* and *unit performance*.

Significant other support and a variety of follow-up contacts are essential services offered by staff support teams. Phone calls, visits, and home contacts are some of the ways staff support teams provide follow-up. Occasionally, someone is seriously impacted by a traumatic experience and a referral to a mental health professional is required to assist in the recovery process.

Table 3-25-1 on the next page provides additional information on commonly used crisis intervention tactics.

Table 3-25-1: Summary of Commonly Used Crisis Intervention Tactics

INTERVENTION	TIMING	TARGET GROUP	POTENTIAL GOALS
Pre-event Planning/Preparation	Pre-event	Anticipated target/victim population	Anticipatory guidance, foster resistance, resilience
Surveillance and Assessment	Pre-intervention	Those directly and indirectly affected	Determine need for intervention(s)
Strategic planning	Both pre-event and during event; Also some after the event	Anticipated exposed and victim populations	Improve overall crisis response
Individual crisis intervention (including "psychological first aid" and SAFER-R)	As needed	Individuals as needed	Assessment, screening, education normalization, reduction of acute distress, triage, and facilitation of continued support
Large group crisis intervention: Rest, Information, and Transition Session (RITS) (formerly known as "demobilization")	Shift disengagement, end of deployment	Emergency personnel, large groups	Decompression, ease transition from intense to less intense work, screening, triage, education, and meet basis needs
*Respite center	Ongoing, large- scale events As needed	Usually Emergency Personnel	Respite, refreshment, screening, triage, and support
*Crisis Management Briefing (CMB); provide large group "psychological first aid"	On-going and post-event; may be repeated as needed	Heterogeneous large groups	Inform, control rumors, increase cohesion
Small group crisis intervention *Small Group Crisis Management Briefing (sCMB)	Ongoing events and post-events	Small groups seeking information and resources	Information, control rumors, reduce acute distress, increase cohesion, facilitate resilience, screening, and triage
*Immediate Small Group Support (ISGS) (also known as defusing), and a form of small group "psychological first aid"	(12 hours or less) Post-event:	Small homogeneous groups	Stabilization, ventilation, reduce acute distress, screening, information.
*Group debriefing (Powerful Event Group Support (PEGS) (also known as Critical Incident Stress Debriefing (CISD))	*1-10 days for acute incidents; may be 3-4 weeks or even longer if group is in post-disaster recovery phases	Small homogeneous groups with equal trauma exposure (e.g., workgroups, emergency service and military)	Increase cohesion, and facilitate resilience. Increase cohesion, ventilation, information, normalization, reduce acute distress, facilitate resilience, screening and triage; Follow up is essential.
Family Crisis Intervention	Pre-event; as needed	Families	Wide range of interventions e.g., pre-event preparation, individual crisis intervention, CMB, PEGS (CISD), or other group process
Organization/Community Intervention, Consultation	Pre-event; as needed	Organizations affected by trauma or disaster	Improve organizational preparedness and response; leadership consultation
Pastoral Crisis Intervention	As needed	Individuals, small groups, large groups, congregations, and communities who desire faith-based presence/crisis intervention	Faith-based support
Follow-up and/or referral; facilitate access to continued care	As needed	Intervention recipients and exposed individuals	Assure continuity of care

G.S. Everly Jr. and J.T. Mitchell, *Integrative Crisis Intervention* (Ellicott City: Chevron Publishing Corporation, 2008). Adapted with permission.

Individual Approaches for Stress Prevention and Management

Managing personal stress will help each CISAR responder stay focused on hazards at the site and to maintain the constant vigilance required for personal safety. Often CISAR responders do not recognize the need to take time for themselves and to monitor their own emotional and physical health – especially when recovery efforts stretch into several weeks. The following simple guidelines are provided to support CISAR responders:

- Be calm and pace yourself. Think before reacting. Rescue and recovery efforts at the site may continue for days or weeks;
- Make work rotations from high stress to lower stress functions;
- Limit exposure to gory sights and sounds. Handling human remains is highly stressful for most people;
- Take frequent rest breaks. Rescue and recovery operations take place in extremely dangerous work environments. Mental fatigue over long shifts can place CISAR responders at greatly increased risk for injury. Breaks help to keep you alert;
- Four hours sleep in a 24-hour period is a minimum for health;
- Maintain a positive mental attitude;
- Maintain a positive sense of humor;
- Do not over control your emotions;
- Watch out for each other. Co-workers may be intently focused on a particular task and may not notice a hazard nearby or behind;
- Be aware of those around you. CISAR responders who are exhausted, feeling stressed or even temporarily distracted may place themselves and others at risk;
- Maintain as normal a schedule as possible. Regular eating and sleeping are crucial. Adhere to the team schedule and rotation;
- Eat nutritious foods. Avoid too much sugar, foods high in fat content, processed foods, and white bread;
- Try to eat a variety of foods and increase your intake of complex carbohydrates (e.g., breads and muffins made with whole grain, granola bars);
- Make sure plenty of fluids such as water and juices are consumed. Limit caffeine intake. Avoid alcohol use for several days after disaster work. It reduces rapid eye movement sleep patterns and which is not healthy;
- Whenever possible, take breaks away from the work area. Eat and drink in the cleanest area available;
- Recognize and accept what you cannot change (e.g., chain of command, organizational structure, waiting, equipment failures, etc.);
- Talk to people when you feel like it. You decide when you want to discuss your experience. Talking about an event may be uncomfortable. Choose your own comfort level. Listen to your colleagues;
- Use counseling assistance programs available through your agency;
- Recurring thoughts, dreams, or vivid, disturbing memories are normal. They will generally decrease over time. Get help if they become extreme, repetitive, or do not decrease over a month's time.
- Communicate with your loved ones at home as frequently as possible. Express your feelings to people you trust;

- If you are fit, physical exercise helps to reduce the chemicals of distress in a person's body. Even walking helps;
- Attend group support services when offered by a trained support team. They can "take the edge off" of a bad incident;
- Be careful with jokes about the incident. Others may be sensitive;
- Do not engage in unproductive criticism of others. Operational mistakes can be corrected later;
- Anger is a frequent emotion after disaster work. Don't take it personally. Anger should subside in a reasonable amount of time;
- Focus on the here and now. Telling old war stories of events that were worse than the current event is not always helpful;
- Listen to those who want to talk about their experience;
- Shedding tears after a painful event is perfectly normal. But, frequent uncontrolled crying spells accompanied by sleep disturbance and an inability to return to normal duties is an indication that a person needs additional assistance; and
- Extreme or prolonged (beyond a month) stress reactions may need professional assistance to reduce their impact. The good news is that several psychological therapies have a proven track record in facilitating the recovery of traumatized people. The earlier the therapy is begun, the better the results.

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The information in this Section was obtained from the following sources: Centers for Disease Control, National Institute for Occupational Safety and Health, *Traumatic Incident Stress: Information for Emergency*

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