

**CATASTROPHIC INCIDENT  
SEARCH AND RESCUE ADDENDUM**  
to the  
**National Search and Rescue Manual**  
[Previously the *National Search and Rescue Supplement*]

Version 1.1



August 2008

Department of Homeland Security  
Department of Interior  
Department of Commerce  
Department of Defense  
Department of Transportation  
National Aeronautics and Space Administration  
Federal Communications Commission  
([www.uscg.mil/nsarc](http://www.uscg.mil/nsarc))

this page left blank



Department of Defense  
Department of Interior  
Department of Commerce

Department of Homeland Security  
Federal Communications Commission  
Department of Transportation

National Aeronautics and Space Administration

## **National Search and Rescue Committee**

### **Letter of Promulgation**

#### **Catastrophic Incident Search and Rescue Addendum (Version 1.1) To the National Search and Rescue Manual**

Washington, D.C.  
August 20, 2008


The *National Search and Rescue Plan*, signed by the Departments of Homeland Security, Defense, Interior, Transportation and Commerce, the National Aeronautics and Space Administration and the Federal Communications Commission, supports Federal efforts in the response to catastrophic incidents as described in the *National Response Framework (2008)* and *Emergency Support Function-9, Search and Rescue*.

To support national, interagency Search and Rescue (SAR) response efforts during times of severe national disasters, the National Search and Rescue Committee developed this *Catastrophic Incident Search and Rescue (CIS) Addendum* to the *National Search and Rescue Manual* as guidance for Federal SAR responders.

Saving lives in a catastrophic incident is a unique and difficult challenge, as well as posing significant risk for the SAR responder. Additionally, normal logistics, communication and support may not be available. As a result, this CIS Addendum was developed to provide guidance to Federal SAR responders when called to respond to a catastrophic incident.

The United States will always have disasters. When Federal SAR responders work together with State, local, tribal and volunteer SAR responders in order to save lives when these disasters occur, the more effective crucial life saving operations can be implemented. It is with this vision that the National Search and Rescue Committee created the CIS Addendum.

On behalf of the National Search and Rescue Committee,

  
RDML Joseph R. Castillo  
Chairman, National Search and Rescue Committee  
Director of Response Policy  
United States Coast Guard

## Forward

9/11 and Hurricane Katrina were historic events for Federal, State, local and tribal Search and Rescue (SAR) responders in the planning and execution of large-scale SAR operations. The National SAR Committee membership, comprised of the Departments of Defense, Homeland Security, Transportation, Commerce, Interior, the Federal Communications Commission and the National Aeronautics and Space Administration, understood that how the Federal government responded to large-scale catastrophic incident SAR (CIS) operations had to improve. As a result, in 2007 NSARC created a Task Force to update the *National SAR Supplement (NSS)*<sup>1</sup> to the *International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual*. The Task Force's goal was to update, expand and improve national, interagency SAR guidance for the Federal Government's readiness and execution of SAR operations during catastrophic incidents.

The Task Force realized that additional guidance, in addition to the NSM, would be required to support Federal SAR responders during CIS operations, in harmony with the implementation of the Department of Homeland Security's 2008 *National Response Framework (NRF)* and its associated *Emergency Support Function 9 (ESF-9) – Search and Rescue*. As a result, this *Catastrophic Incident SAR Addendum* to the NSM was created to support and guide Federal SAR responders when an emergency or disaster is declared and CIS operations are conducted under the provisions of the NRF.

With so many different Federal, State, local, tribal and volunteer SAR response cultures, each with unique capabilities, language and responsibilities, this Addendum provides simple guidance for Federal SAR responders working side by side to save lives. Federal SAR responders need CIS guidance; States need to know what to expect when Federal SAR responders aid in CIS operations.

This is why the National SAR Committee created this CIS Addendum.

Catastrophic Incident Search and Rescue Task Force  
National Search and Rescue Committee

---

<sup>1</sup> The National SAR Supplement has been renamed the *National SAR Manual (NSM)*.

## Table of Contents

Letter of Promulgation	3
Forward	4
Table of Contents	5
List of Acronyms	7
Introduction	9
Key References	11
Primary Guidance Documents	13
Search and Rescue Overview	15
Emergency Support Function – 9	16
Lead Federal Responsibilities	17
Federal Emergency Management Agency	20
Department of Defense	22
States	27
Nongovernmental Organizations	29
CIS Operating Principles	30
Assumptions	33
Planning	35
Risk Assessment	37
National Incident Management System	39
CIS Management	41
Notice and No-Notice Events	44
CIS Searches	46
Communications	49
Aircraft Management	52
Boat Operations Management	56
Temporary Flight Restrictions	60
Operational Messages	62
Geo-referencing	64
Structural Marking Systems	72
Delivery of Survivors	75
Suspension or Termination of SAR Operations	77
Children	79
Persons with Special Needs	81

Deceased Persons and Next of Kin	83
Animals	85
Media and Public Relations	88
Chemical, Biological and Radiological incidents	90
Chemical Incidents	92
Biological Incidents	96
Radiological Incidents	98
Exercises	104

## List of Acronyms

ACO	Aircraft Coordinator
ADA	Americans with Disabilities Act
AFRCC	Air Force Rescue Coordination Center
AOR	Area of Responsibility
CBR/N	Chemical, Biological, or Radiological/Nuclear
CIS	Catastrophic Incident Search and Rescue
DCO	Defense Coordination Officer
DEN	Domestic Events Network
DHS	Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
DOD	Department of Defense
DSCA	Defense Support of Civil Authorities
EMAC	Emergency Management Assistance Compact
EMP	Electromagnetic Pulse
EMS	Emergency Medical System
EPLO	Emergency Preparedness Liaison Officer
ESF	Emergency Support Function
FAA	Federal Aviation Administration
FCO	Federal Coordinating Officer
FEMA	Federal Emergency Management Agency
GARS	Global Area Reference System
GPS	Global Positioning System
HSPD	Homeland Security Presidential Directive
IAMSAR	International Aeronautical and Maritime Search and Rescue
IAP	Incident Action Plan
IC	Incident Commander
ICS	Incident Command System
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
MHz	Megahertz
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRO	Mass Rescue Operation
NDART	National Disaster Animal Response Team
NIFOG	National Interoperability Field Operations Guide
NIMS	National Information Management System
NOK	Next-of-kin
NAD	North American Datum
NRF	National Response Framework
NSM	National Search and Rescue Manual
NSP	National Search and Rescue Plan
OSC	On Scene Coordinator
PDD	Presidential Disaster Declaration
PIO	Public Information Officer
PR	Personnel Recovery
RCC	Rescue Coordination Center
REAC	Radiation Emergency Assistance Center
SAP	Search Action Plan
SAR	Civil Search and Rescue
SC	Search and Rescue Coordinator
SITREP	Situation Report
SMC	Search and Rescue Mission Coordinator
SOSC	System Operations Support Center
SRT	Special Response Team
SRU	Search and Rescue Unit
TFR	Temporary Flight Restriction
US&R	Urban Search and Rescue
USC	United States Code
USCG	United States Coast Guard
USNG	U.S. National Grid
USNORTHCOM	U.S. Northern Command
USPACOM	U.S. Pacific Command
VHF	Very High Frequency
VOAD	Voluntary Organizations Active in Disasters
WGS	World Geodetic System



## Introduction

*Purpose*

*Limited Scope*

*Potential Large Scale*

*Effective CIS Communication*

*Effective CIS Planning*

*Federal Preparedness and Response*

### **Purpose**

This Addendum 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 on what to expect of Federal SAR responders.

### **Limited Scope**

This Addendum provides guidance for catastrophic incident SAR (CIS). CIS 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 *National Response Framework* and its *Emergency Support Function-9, Search and Rescue (ESF-9)*.

Additionally, CIS is within the scope of the *National Search and Rescue Plan (NSP)* for which the *National Search and Rescue Manual (NSM)* and this Addendum to the NSM provide guidance.

This Addendum is not intended to cover in any depth detailed information that should be included in other Federal agency or State SAR plans, or that is readily available elsewhere. Also, the material in this Addendum supplements, but does not supersede, provisions of the *National Search and Rescue Plan (NSP)* and the *National Search and Rescue Manual (NSM)*.

### **Potential Large Scale**

Depending on the nature of a catastrophic incident (i.e., earthquake, hurricane, terrorist attack, etc.), CIS operations may or may not be necessary; if CIS operations are conducted, operations may be minor, or a major aspect of the overall incident response. Also, State, local and tribal authorities may or may not be able to conduct CIS operations with their own resources.

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

### **Effective CIS Communication**

Information must be readily available to support the CIS effort, to meet the needs of the response decision makers, the media, public and families of the persons in distress, which may number in the hundreds or thousands. Many means of communication will need to be available and interlinked amongst organizations at various levels to coordinate and disseminate large amounts of information reliably for the duration of the response. A surge in the numbers of competent staffing in all key organizations must be available immediately and be sustainable for, quite possibly, weeks at a time. Equipment and logistics demands could increase to unprecedented levels.

### **Effective CIS Planning**

Successful large-scale CIS operations depend on the advance provision of flexible and all-level contingency plans. Intense

integrated planning and operational efforts must also be carried out in real time throughout actual rescue efforts.

### **Federal Preparedness and Response**

Moral and legal obligations, as well as public and political expectations, drive the need to be prepared to carry out CIS operations safely and effectively should they become necessary.

Normally, Federal resources are used to respond to catastrophic incidents only when State, local and tribal response capabilities are overwhelmed. However, unlike some other response operations associated with the *National Response Framework* (NRF), Federal agencies with SAR Coordinator (SC) responsibilities also have civil SAR duties and authorities assigned by the NSP that must be considered along with State, local and tribal capabilities.

## Key References

### *Overview*

*Robert T. Stafford Disaster Relief and Emergency Assistance Act  
("Stafford Act")*

*National Search and Rescue Plan (NSP)*

*National Response Framework (NRF)*

*Emergency Support Function 9 (ESF-9), Search and Rescue*

*National Search and Rescue Manual (NSM)*

*International Aeronautical and Maritime Search and Rescue Manual  
(IAMSAR Manual)*

*Department of Defense Directive 3003.01*

*Joint Publication 3-50, Personnel Recovery*

### **Overview**

The following information provides a very brief overview of key legislation and documents that provide authority and guidance for CIS operations.

#### **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).

#### **National Search and Rescue Plan (NSP)**

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 search and

rescue (SAR) services so that the United States can meet its domestic needs and international commitments.

#### **National Response Framework (NRF)**

A general guide to how the nation conducts an all-hazards incident response; it provides a comprehensive approach to local or large-scale domestic incident response; the NRF is built on flexible, scalable and adaptable coordinating structures to align key roles and responsibilities, linking all levels of government and private sector businesses and nongovernmental organizations.

#### **Emergency Support Function 9, Search and Rescue (ESF-9)**

Federal grouping of resources, capabilities and strategic objectives for civil SAR (For further information, see the ESF-9 Section.).

### **National Search and Rescue Manual (NSM)**

The NSM 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)**

A three-volume Manual used worldwide for aeronautical and maritime civil SAR; in the United States, the IAMSAR Manual is supplemented by the NSM.

### **Department of Defense Directive 3003.01**

Titled DOD *Support to Civil Search and Rescue*, this Directive is the primary Secretary of Defense policy guidance for implementing military responsibilities to support civil SAR in accordance with the NSP.

Note: There are many legal authorities that apply to Federal Agencies involved in SAR, particularly CIS; NSM (Chapter 7) and the FEMA NRF Resource Center ([www.fema.gov/nrf](http://www.fema.gov/nrf)) identify many relevant civil and military authorities not mentioned above.

### **Joint Publication 3-50, Personnel Recovery**

DOD doctrine for personnel recovery during joint military operations; Personnel recovery (PR) is the sum of military, diplomatic, and civil efforts to affect the recovery and reintegration of isolated personnel; among other things, JP 3-50 provides for combatant commanders (e.g., USNORTHCOM and USPACOM) to establish Joint Personnel Recovery Centers (JPRCs) to plan, coordinate, and monitor PR missions, and to integrate PR activities with other operations and activities within their respective areas of operation (AORs). Appendix A of this Publication provides specific guidance on DOD support of civil SAR.

## Primary Guidance Documents

*Catastrophic Incident Search and Rescue (CIS) Addendum*

*National Search and Rescue Plan*

*National Search and Rescue Manual*

*National Response Framework*

*Terms and Acronyms*

### **Catastrophic Incident Search and Rescue (CIS) Addendum**

This document is an Addendum and supplements the NSM; focusing specifically on providing guidance and policy for CIS operations.

This Addendum is not intended to duplicate extensive general SAR information contained in the NSP, NSM, NRF or other associated documents; however, much of the information in those documents also applies to CIS. Users of this Addendum should have each of these documents available and have a working knowledge of each.

### **National Search and Rescue Plan (NSP)**

The NSP is the Nation's highest level policy document on civil SAR, signed by seven Heads of Federal departments and agencies with identified civil SAR responsibilities.

Primary guidance for implementing the NSP is provided in the IAMSAR Manual, NSM and relevant directives of the Participants to the NSP. The NSP covers all major types of civil SAR in the United States, including SAR operations covered by the NRF and ESF-9.

For SAR, provisions of the NRF and ESF-9 supplement rather than replace provisions of the NSP and this Addendum.

"It is the policy of the signatory Federal agencies to provide a *National Search and Rescue Plan...* for the United States for coordinating search and rescue (SAR) services to meet domestic needs and international commitments."

*National Search and Rescue Plan of the United States (2007), Paragraph 1*

### **National Search and Rescue Manual (NSM)**

The NSM is the nation's primary guidance for implementing the NSP. Other Addendums to the NSM may also be relevant to CIS operations depending upon the nature of a response effort and which Federal authorities are involved.

### **National Response Framework (NRF)**

The *National Response Framework (2008)* is a comprehensive national guide on how to conduct an all-hazards response. It describes how communities, States, the Federal Government, private-sector and nongovernmental organizations partner for a

coordinated, effective national response. In addition, the NRF describes circumstances where the Federal Government exercises a larger response role, including catastrophic incidents where a State would require significant CIS support.

The NRF has emergency support function annexes, one of which is *Emergency Support Function 9, Search and Rescue* (ESF-9). ESF-9 is used to rapidly deploy Federal resources to provide lifesaving assistance to State, tribal, and local authorities when activated for incidents or potential incidents requiring a coordinated Federal response. The types of SAR operations covered by ESF-9 are:

- Structural collapse (urban) search and rescue (US&R);

- Waterborne search and rescue;
- Inland/wilderness search and rescue; and
- Aeronautical search and rescue.

All Federal departments and agencies must adopt and implement the NRF where applicable.

### **Terms and Acronyms**

The glossary and list of acronyms that should be used with this CIS Addendum are provided in the NSM and at the NRF Resource Center (<http://www.fema.gov/nrf>).

SAR personnel should continue to use standard SAR terminology and procedures regardless of the magnitude of the SAR incident.

## Search and Rescue Overview

*Civil Search and Rescue*

*Catastrophic Incident Search and Rescue*

*Presidential Declarations*

### Civil Search and Rescue (SAR)

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

### Catastrophic Incident Search and Rescue (CIS)

CIS 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 CIS could range from normal SAR operations to the conduct of mass rescue operations; what qualifies SAR operations as CIS is when the response is associated with a Presidential declaration.

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

### Presidential Declarations

How does the prerequisite presidential declaration occur that by definition is necessary for CIS? Typically:

Local responders notify elected officials; mutual aid and State assistance is requested.

State Governor requests interstate assistance and Presidential declaration via the cognizant FEMA Regional Office and FEMA Administrator.

President makes the necessary emergency or major disaster “declaration.”

Response teams and other Federal resources deploy (if enough warning exists, Federal resources may be able to deploy in advance of an expected incident or declaration).

## Emergency Support Function - 9

### *Emergency Support Functions*

#### *ESF-9*

#### *FEMA Role in ESF-9*

### Emergency Support Functions

Federal and State 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 Homeland Security Presidential Directive 5 (HSPD-5). Not all incidents result in the activation of ESFs. Activation depends on the nature and magnitude of the event, the suddenness of onset, and the existence of SAR resources in the affected area.

#### ESF-9

ESF-9 (Search and Rescue) capabilities include distress monitoring, communications, location of distressed personnel, coordination, and rescue operations including extrication or evacuation along with medical assistance to assist persons and property in potential or actual distress.

The following are the specialized ESF-9 services and associated Primary Agencies

for incidents or potential incidents requiring a coordinated Federal response:

FEMA	Structure Collapse (Urban) SAR (US&R)
Coast Guard	Waterborne SAR
National Park Service	Inland/Wilderness SAR
Air Force (Air Force RCC)	Aeronautical SAR

As provided in ESF-9, immediate SAR operations (CIS) are conducted in accordance with the NSP, the NSM and the IAMSAR Manual, which define SAR responsibilities and provide guidance to the involved Federal agencies. For CIS, these agencies assist or augment State, local and tribal capabilities.

#### FEMA Role in ESF-9

The ESF-9 coordinator is FEMA. FEMA also initiates the National Urban Search and Rescue Response System for incidents requiring a coordinated Federal response that are likely to involve collapsed structures. The National US&R Response System consists of US&R Task Forces, Incident Support Teams, and technical specialists.



## **Lead Federal Responsibilities**

*General Provisions*

*ESF-9 and the NSP*

*ESF-9 Primary Agencies*

*Search and Rescue Coordinators (SC)*

*Search and Rescue Mission Coordinators (SMC)*

*Summary of Federal Responsibilities*

*Resolution of Federal Responsibilities*

### **General Provisions**

The NRF, Chapter 1, provides an overview of the key roles and responsibilities of partners who implement the NRF; additionally, the NSP provides an overview key Federal roles and responsibilities for civil SAR.

When the overall coordination of Federal response activities is required, it is implemented through the Secretary, Department of Homeland Security, and consistent with the President's Homeland Security Presidential Directive (HSPD) 5. Other Federal departments and agencies carry out their response authorities and responsibilities within this overarching construct. Nothing in the NRF alters or impedes the ability of Federal, State, tribal, or local departments and agencies to carry out their specific authorities and responsibilities.

### **ESF-9 and the NSP**

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

implementation. Because of this ESF-9/NSP relationship, is important to understand the relationships between the Primary Agencies identified above and their counterparts in the civil SAR system.

SAR responsibilities under both ESF-9 and the NSP provide and arrange for SAR services. SAR services involve the performance of distress monitoring, communication, coordination and SAR functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installations.

### **ESF-9 Primary Agencies**

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.

Primary Agencies for ESF-9 are as follows:

*Federal Emergency Management Agency (FEMA).* FEMA sponsors the NRF, is the ESF Coordinator for ESF-9, is the Primary Agency for structural collapse SAR, and is responsible for the National US&R (urban SAR) Response System. FEMA can dispatch various types of specialized teams to areas affected by a catastrophic incident. FEMA supports the National Disaster Medical System.

*U. S. Coast Guard.* The Coast Guard is the Primary Agency for waterborne SAR operations, which may include areas that are flooded.

*National Park Service.* The National Park Service is the Primary Agency for inland/wilderness SAR operations (within back country, remote, undeveloped, rural, or roadless areas).

*U.S. Air Force.* The U. S. Air Force is the Primary Agency for aeronautical SAR including SAR which may require specialized SAR operations in open and wilderness areas and nearing the vicinity of airports (Note: Aeronautical SAR is related to aircraft occupants (persons) in distress, not to SAR operations conducted using aeronautical SAR facilities.).

### **Search and Rescue Coordinators (SC)**

As per the NSP, 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, 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 NSM.).

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.

### **Air Force**

The Air Force is the Federal SC for what is commonly called the Inland SAR Region, which geographically corresponds to an internationally-recognized aeronautical SAR Region established under the International Civil Aviation Organization, and which corresponds to the continental United States.

The NSP provisions, taken as a whole and consistent with agreements signed between each State Governor and the SC, make the Air Force the Federal SC for both land and aeronautical SAR within its aeronautical SAR region.

### **Search and Rescue Mission Coordinators (SMC)**

Each SAR Region has an associated Rescue Coordination Center (RCC) established by the appropriate SC; RCCs perform the SMC function, a temporary function to coordinate response to an actual or apparent distress situation.

### **Summary of Federal Responsibilities**

Refer to ESF-9 for information about Primary and Supporting Agencies for the types of SAR operations that this ESF covers.

For CIS operations, Primary Agencies and Federal SCs will always be involved because the NSP applies even when ESF-9 is implemented; however, the relevant Primary Agency has the lead responsibility. The table below shows how their responsibilities compare:

**ESF 9: Primary Agencies****FEMA:** Urban SAR**Coast Guard:** Waterborne SAR**National Park Service:** Inland/Wilderness SAR**Air Force RCC:** Aeronautical SAR**National SAR Plan:  
Federal SAR Coordinators****U.S. Pacific Command:** Alaska**Coast Guard:** Maritime SAR Regions and Hawaii**National Park: Service:** National Parks**Air Force:** Continental U.S. other than Alaska**Resolution of Federal Responsibilities**

ESF-9 Primary Agencies are responsible for coordinating Federal CIS operations as indicated above. All CIS aeronautical SAR is assigned to the Air Force RCC, although under the NSP (however, aeronautical SAR in the Maritime SAR Regions is assigned to the Coast Guard). CIS land SAR is assigned to the National Park Service, although land SAR outside national parks is normally assigned by the NSP to other agencies. Waterborne SAR may include flooded or other areas beyond the Maritime SAR Regions that the Coast Guard has SC responsibilities under the NSP.

Considering the differences in how ESF-9 and the NSP assign Federal SAR Coordinator responsibilities, ESF 9 Primary Agencies should, as appropriate, work closely with Federal authorities that have SAR responsibilities as identified in the NSP.

For example, the National Park Service may, as appropriate, coordinate its CIS responsibilities outside National Parks with the Air Force.

## **Federal Emergency Management Agency**

### *FEMA's Overall Role*

### *Homeland Security Presidential Directive 5 (HSPD-5)*

### *FEMA, ESF-9 and Urban SAR Teams*

### *FEMA Regional Offices*

#### **FEMA's Overall Role**

The Federal Emergency Management Agency (FEMA) is an agency within the Department of Homeland Security (DHS). Under the Homeland Security Presidential Directive (HSPD-5), Secretary, DHS, is responsible for, among other things: administering NIMS for use by Federal, State, local and tribal governments; and developing and 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 in meeting 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.

#### **Homeland Security Presidential Directive 5 (HSPD-5)**

The following four HSPD-5 criteria define situations for which DHS shall assume overall Federal incident management coordination responsibilities within the NRF:

- A Federal department or agency acting under its own authority has requested DHS assistance;
- The resources of State, local and tribal authorities are overwhelmed and Federal assistance has been requested;
- More than one Federal department or agency has become substantially involved in responding to the incident; or
- The Secretary has been directed by the President to assume incident management responsibilities.

#### **FEMA, ESF-9 and Urban SAR Teams**

FEMA is the coordinating agency for ESF-9, which provides responsibilities and guidance for SAR and CIS (including urban SAR for which FEMA sponsors support teams). FEMA can provide information about its National Urban Search and Rescue System and the National Disaster Medical System which use locally-sponsored teams to improve response. Currently, there are 28 self-supporting urban SAR Task Forces that can assist State, local and tribal governments, mainly in rescuing victims of collapsed structures; they have a six-hour activation time for deployment.

**FEMA Regional Offices**

FEMA has ten regional offices that help support development of NRF-related response plans, help States and communities

improve readiness, and that mobilize FEMA assets and evaluation teams when required under ESF-9.

## Department of Defense

*DOD Support for Civil SAR*

*DOD Policy*

*DOD Responsibilities*

*Immediate Response by DOD Resources*

*Defense Support to Civil Authorities (DSCA)*

*Legal Restrictions*

*Key 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 great property damage under imminently serious conditions, as well as to provide support under their separate established authorities. They are also authorized to respond immediately to assist persons in distress.

Under provisions of the *National Search and Rescue Plan* (NSP) and existing Memoranda of Understanding (MOUs)/Memoranda of Agreement (MOAs), DOD components maintain active, reserve, and National Guard facilities, and other DOD resources that can

be *immediately* used for SAR *without* the need of 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 Disaster Declaration (PDD) that will enable a number of national mechanisms to be activated to assist State, local and tribal governments. This may involve the implementation of the *National Response Framework* (NRF), FEMA coordination of all SAR operations under the ESF-9 Annex 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. This support may also 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 CIS operations should be submitted to the Secretary of Defense from the FCO via the DCO at the Joint Field Office.

As discussed in the section of the NSP on “Support Outside United States SAR Regions,” DOD may also, if requested, support civil SAR operations anywhere in the world, consistent with its expertise, capabilities and legal authority.

## DOD Responsibilities

SAR Coordinator (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. Air Force for the continental United States other than Alaska, and to 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 by the NSP, which includes establishment of Rescue Coordination Centers (RCCs) are not generally considered to be a support functions, but rather a primary function assigned to DOD.

The NSP also assigns substantial support roles for civil SAR to the military; these are largely endorsed for CIS by ESF-9. For CIS operations other than US&R, the NRF

generally builds on rather than supplants provisions of the NSP.

## Immediate Response by DOD Resources

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

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.

In response to a request for assistance from a local authority under imminently serious conditions, if time does not permit approval from higher headquarters, the Heads of DOD Components, commanders, and/or responsible DOD civilians, may employ the resources under their control, subject to any supplemental direction provided by authority, and provide those resources to save lives, prevent human suffering, or mitigate great property damage.

(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 CIS 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) to be effective, 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 CIS 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. NRF-related DOD support is referred to as *Defense Support of Civil Authorities* (DSCA). The relevant DOD Directive for DSCA is DODD 3025.15. 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.

The Stafford Act provides for requests to the President for use of DOD resources to support emergency response such as CIS operations and protects the ability of the military to carry out its primary military duties while engaged in such support.

Requests are forwarded to DOD by FEMA, then to the appropriate Defense Coordinating Officer (DCO) that DOD has assigned to each FEMA Region. Each DCO

plans, coordinates and integrates DSCA with Federal, State, local and tribal authorities.

### **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, and 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 CIS 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.

### **Key DOD DSCA Elements**

*U.S. Northern Command (USNORTHCOM).* When DOD personnel and resources are authorized to support civil authorities, command of those forces is the responsibility of the USNORTHCOM within its area of responsibility (AOR).

*U.S. Pacific Command (USPACOM).* When DOD personnel and resources are authorized to support civil authorities, command of those forces is the responsibility of the USPACOM within its AOR.

USNORTHCOM and USPACOM have the responsibility to establish a Joint Personnel Recover Center (JPRC) to coordinate SAR operations in their AOR with the designated primary agency. DOD SAR response to NRF and NSP will be an escalation from



state support to civil SAR support to DOD support for CIS operations.

*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 at 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 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 liaison officers will "plug-in" to and coordinate 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 the AFRCC is the ESF-9 Primary Agency, the AFRCC will continue to handle day-to-day SAR operations and transfer all CIS operations over to the USNORTHCOM JPRC.

*Joint Personnel Recovery Center (JPRC).* For incidents in which the DOD/USAF (AFRCC) is the primary agency for DOD forces supporting catastrophic SAR operations, the JPRC is the command and control node for DOD Title-X SAR assets.

For CIS operations, the JPRC:

- Commands and controls DOD SAR forces for CIS operations based on the State SAR Plans and State requests;
- Serves as the Primary Agency for Aeronautical SAR over land and as the DOD SAR Mission Coordinator for aeronautical CIS operations;
- Handles CIS 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.* The EPLO program supports DSCA with teams at each of the 10 FEMA Regions and at the National Guard's Joint Force Headquarters – State or State Emergency Operations Centers. The EPLO program refers to all DOD personnel with primary planning, coordination, and execution responsibilities under DOD Directive 3025.1. EPLO personnel present DOD claims for resources, as well as process and evaluate civil DSCA requests.

EPLOs may operate from FEMA Headquarters and regional offices, or anywhere throughout DOD.

EPLO is a generic term used to refer collectively to Service and other DOD personnel who coordinate military assistance to other Federal Agencies and State governments, and help coordinate the military response to all hazards.

EPLO positions are filled by Reservists.

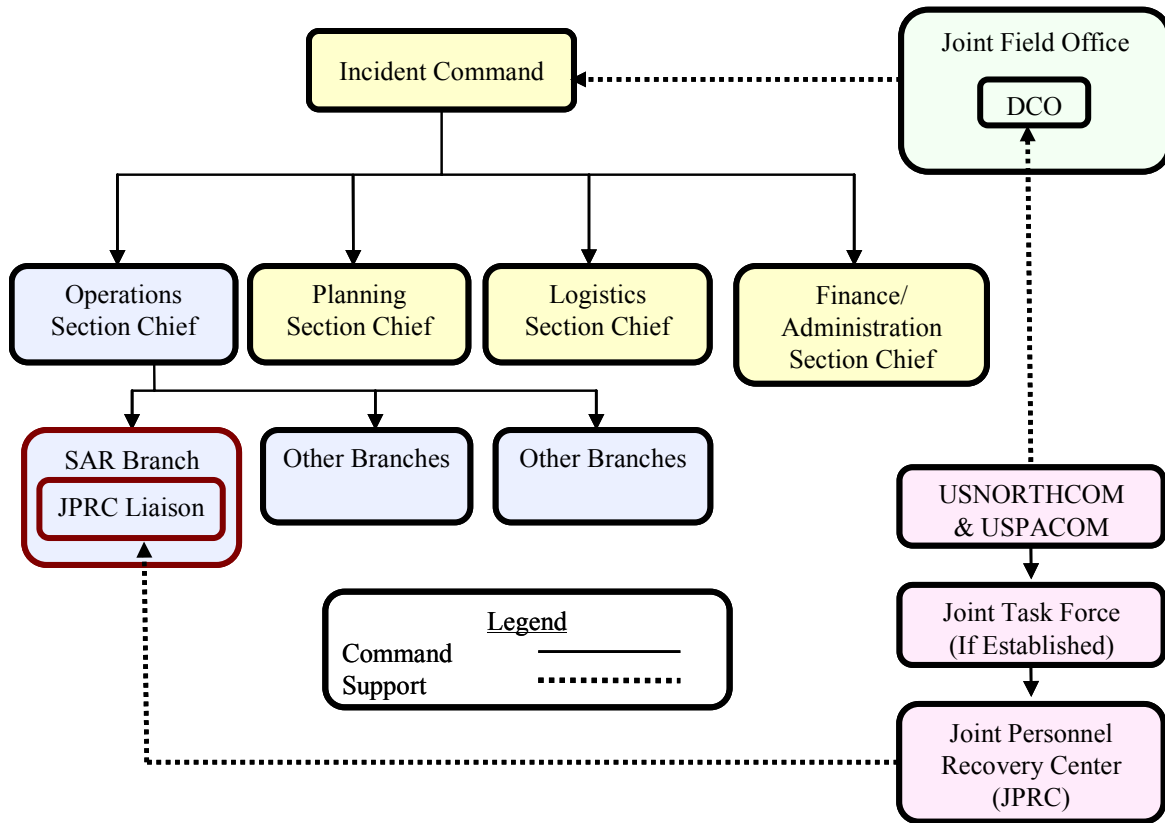
### **National Guard**

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 and are not part of Federal military response efforts. As with

other response authorities in the incident area, DOD elements should coordinate

closely with National Guard forces.

### Simplified DOD Support Structure for Catastrophic Incident SAR



## States

*Overview*

*Providing and Requesting Assistance*

*SAR Agreements*

*SAR Plans*

*Emergency Management Assistance Compact*

### Overview

Key State-level SAR issues include:

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

Refer to the NSM for discussion of State roles and State coordination with Federal authorities.

### Providing and Requesting Assistance

The State provides assistance to local governments if requested. States have significant resources of their own, including 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

Most States have signed SAR agreements or plans with the Federal SAR Coordinator (SC) designated in the NSP responsible for their respective areas. For example, the Air Force, via the AFRCC, has memoranda of agreement with each Governor, and memoranda of understanding with State authorities responsible for SAR. However, States should develop SAR Plans that cover CIS operations. The NRF and ESF-9 address relevant division of responsibilities, responsible agencies, and points of contact.

### SAR Plans

States, Tribal, U.S. Territories and the District of Columbia should maintain SAR plans that support the NSM and this Addendum. These SAR plans should detail integrating with Federal assets for CIS operations.

The NSM provides a SAR Plan model that States can adapt to institute common principles and guidance conducive to successful SAR planning and operations.

**Emergency Management Assistance Compact (EMAC)**

The EMAC is administered by the National Emergency Management Association, a congressionally ratified organization that provides form and structure to the interstate

mutual aid and assistance process. All States belong to the EMAC system.

Most likely, National Guard forces will be involved in almost all CIS operations. In response to an EMAC request, National Guard forces will operate under the command and control of requesting State authorities when deployed from outside the affected State(s).

## **Nongovernmental Organizations**

*Functions*

*Working Relationships*

*Private Sector*

### **Functions**

Working through emergency operations centers and other structures, nongovernmental and voluntary organizations can provide invaluable assistance to SAR operations, including shelter, emergency food supplies, assistance with animals, and other vital CIS support services. These groups often provide specialized help for individuals with special needs, including those with disabilities.

### **Working Relationships**

To effectively engage these key partners, governments must coordinate with voluntary agencies, existing Voluntary Organizations Active in Disaster (VOADs), community and faith-based organizations, and other entities to develop plans to manage

volunteer services and donated goods, establish appropriate roles and responsibilities, and train and exercise plans and procedures before an incident occurs.

Planning, training, and common sense management can allow these valuable resources to contribute in ways that will enhance operations and logistical support with minimal disruptions to the overall response.

### **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 CIS response efforts, either on a paid basis or through donations.

## **CIS Operating Principles**

*Response*

*Lifesaving Priority*

*Immediate Response*

*Response Actions*

*Operating Plans*

*Concepts of Operation*

*All Available Resources*

*Balance of Concerns*

*Assistance*

### **Response**

The term “response,” as used in the NRF, includes immediate actions to save lives, protect property, and meet basic human needs. This is a broad view compared with normal SAR, but is typical of CIS operations, bearing in mind the priority that must be preserved for lifesaving actions.

### **Lifesaving Priority**

A CIS 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, which normally requires repositioning resources before they are requested (if possible).

### **Immediate Response**

When appropriate for lifesaving, Federal agencies that conduct SAR operations generally have authority to respond

immediately (includes DOD component commands as per DOD Directive 3025.15).

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 an 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 (such as a critical national security situation), jurisdictional, legal nor financial considerations, nor bias about circumstances or the persons in distress, should preclude prompt response to save lives. There may be situations, such as national security concerns or interference with critical military duties, which may need to be taken into account.

Response unity can build as time permits without causing undue delays to response needed for lifesaving.

### **Response Actions**

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

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

NRF, Chapter 2, provides a detailed overview of these response tasks.

### **Operating Plans**

In the NRF, “Emergency plans of operation” are known as “SAR plans of operation” within the national and international SAR communities. A CIS operation involves capably implementing such plans. Recovery and mitigation activities are beyond the scope of CIS.

### **Concepts of Operations**

Relevant civil SAR concepts of operation are covered in the IAMSAR Manual, NSM, and ESF-9; the focus of this Addendum is additional or unique policy and guidance that applies during CIS operations. Because this civil SAR guidance already exists, ESF-9 generally defers to the NSP and NSM for CIS operations.

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

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

### **All Available Resources**

The principle of using all available resources is especially pertinent to demanding SAR cases, but at the same time additional risks are often present in a CIS environment, and certain certification and security requirements may have to be considered.

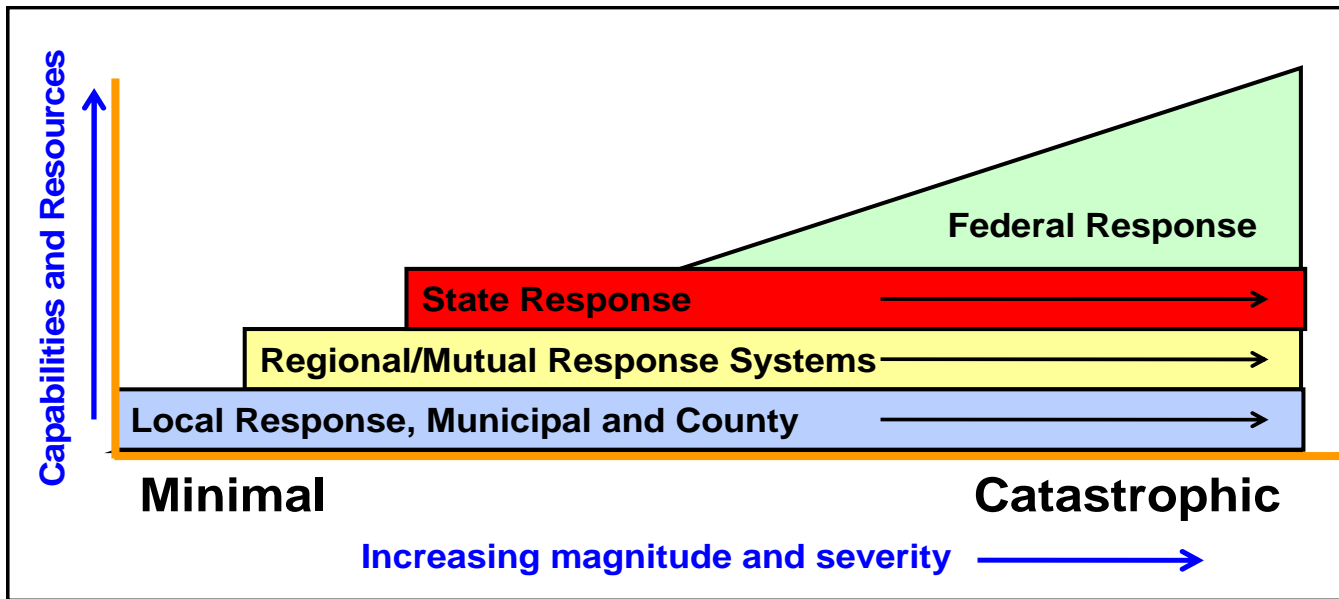
### **Balance of Concerns**

CIS involves readiness to act, balanced with risk assessment (see the Section on 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. Acting with dispatch, but effectively, requires clear, focused communication and critical support processes already in place.

### **Assistance**

CIS Operations is a tiered approach (see chart on next page):

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



Tiered Approach to SAR Operations



## Assumptions

*Federal Role*

*Scope of Operations*

*Immediate Support*

*Possible Events*

*Uncertainty*

The following assumptions should be taken into account when considering Federal CIS planning.

### **Federal Role**

The main role of Federal SAR responders is to support the Incident Commander (IC).

The highest priority of a Federal CIS response is to save the lives of persons in distress.

### **Scope of Operations**

A catastrophic incident may result in large numbers of persons in distress, possibly in the tens of thousands.

The nature and scope of the catastrophic incident may 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.

CIS response capabilities and resources of the local jurisdiction (to include mutual aid from surrounding jurisdictions and response support from the State) may be insufficient and quickly overwhelmed. State and local emergency personnel who normally respond to incidents may be among those affected and unable to perform their duties.

### **Immediate Support**

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, and local assessment and response capabilities and require immediate Federal support for assessment and response. For CIS operations, such 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.

### **Possible Events**

Possible events requiring CIS include natural and man-made disasters such as:

- hurricanes;

- tsunami;
- earthquakes;
- volcanic eruption;
- chemical, biological, radiological, nuclear, or high-yield explosive attacks; and
- possible disease epidemics.

### **Uncertainty**

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 CIS operations are required.

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

A credible common operating picture may not be achievable for up to 48 hours (or longer) after the incident. Often when CIS operations commence, a complete situation and needs assessment may be unavailable.

## Planning

### *Guidance*

### *Agreements and Common Plans*

### *Benefits*

### *Notice and No-Notice Events*

### *Planning Cycle*

### *Action Plans*

### **Guidance**

NRF, Chapter 4, provides guidance on planning and reviews certain natural and man-made threats for which plans should be developed; any of these threats could involve a CIS.

The NSP, NRF and associated documents indicate that effective SAR plans of operation and emergency operating plans, respectively, should be developed in advance for every type of scenario that could potentially occur within a Federal agency's area of responsibility. These documents provide guidance for developing such plans.

(Note: The IAMSAR Manual, Volume 2, provides a sample plan of operation for a mass casualty incident.)

The NSP seeks to maximize compatibility as much as possible between the NSP and the NRF and is written so that it can be implemented independently or concurrently with the NRF and ESF-9.

### **Agreements and Common Plans**

Planning should include development and implementation of any appropriate

agreements, memoranda of understanding, joint plans, etc., that would improve preparedness to provide support or mutual assistance. Such instruments should be developed with any government or non-governmental entities where doing so would likely contribute to better use of available resources, and better coordinated or more successful SAR operations.

### **Benefits**

Planning is foundational for CIS preparedness and response. Planning:

- allows jurisdictions to influence the course of events in a distress situation by determining in advance the actions, policies, and processes that will be followed;
- guides other preparedness activities;
- enables awareness of capabilities across the response community; and
- contributes to unity of effort by providing a common response blueprint.

### **Notice and No-Notice Events**

*Notice Events.* Expected events such as hurricanes provide the response organization

the chance to plan, pre-position resources, call for evacuations, and track progress prior to the SAR operations.

*No-notice events.* No-notice events do not allow as much time for action planning, and make general advance planning for response to the various types of potential scenarios even more important. Regardless of notification, all plans should be coordinated with organizational counterparts at the local, State, and Federal level.

### **Planning Cycle**

CIS 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.

### **Action Plans**

A detailed Search Action Plan and Rescue Action Plan (examples in NSM and USCG Addendum) should be used to help minimize the planning cycle time, assist users in finding pertinent information, and help lessen calls for amplification of details.

#### **Example 24 Hour Operations Cycle**

- 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.
- 22:00 Resupply of Places of Safety for next ops period
- 00:00 SAR Situation Recon / Night SAR as necessary
- 03:00 Tactical meeting for Operations brief

## Risk Assessment

*Relevance*

*Assessment Factors*

*Guidance*

### **Relevance**

SAR is inherently dangerous, and the danger will likely be much greater in response to a catastrophic incident due to factors such as workload, environment, complexities, and inexperience, making operational risk management even more critical.

Federal authorities carrying out CIS operations should always make decisions based on relevant risk assessments.

### **Assessment Factors**

There are various models and checklists that can be used to assess risk.

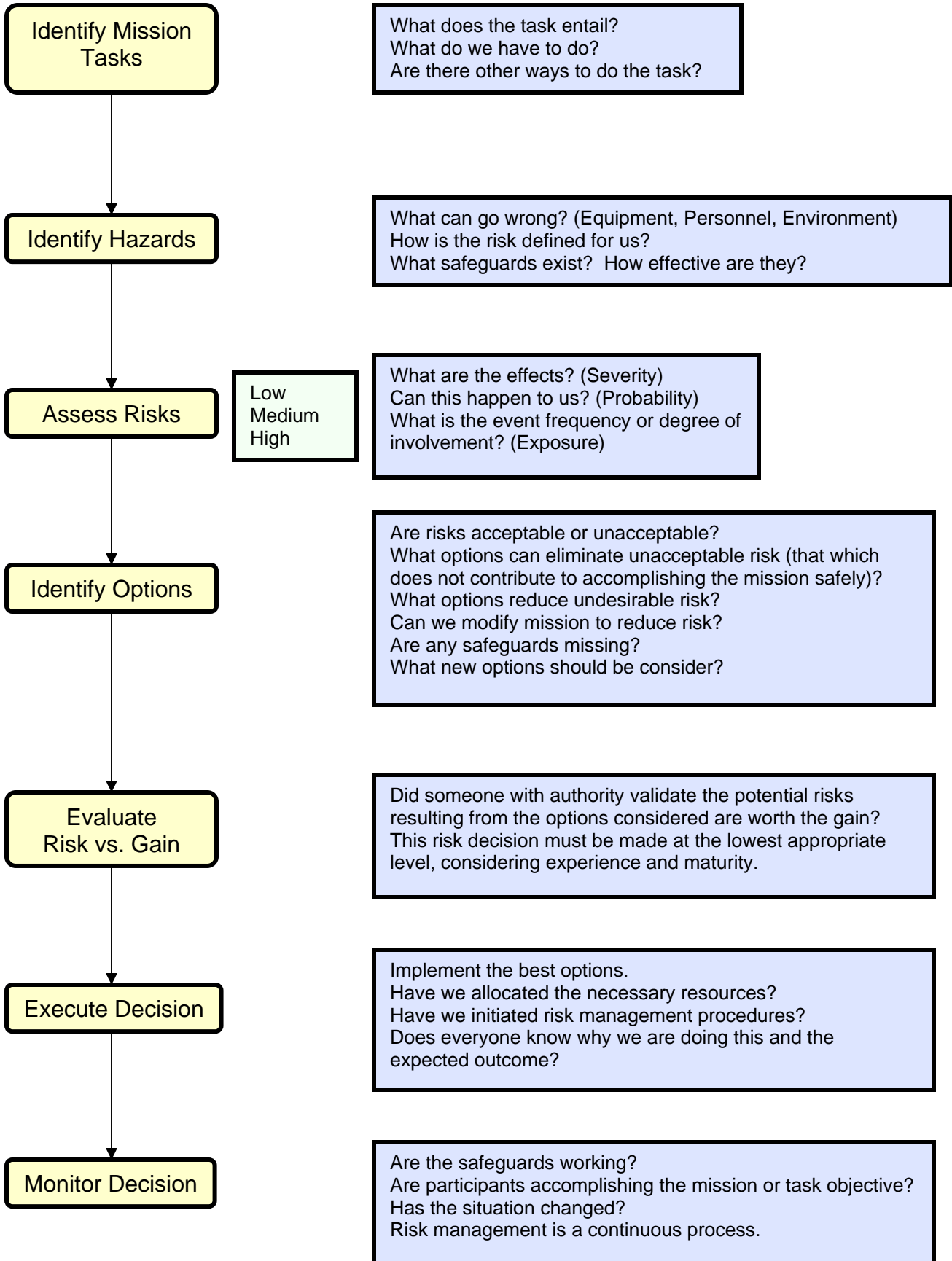
The next page details a general risk management process.

Risk management is a continuing, repeated process.

Whichever model or checklist a unit uses to evaluate operational risk, that form should be included in the SAR case file or incident records.

### **Guidance**

U.S. Coast Guard Addendum to the NSM (available at [www.uscg.mil/nsarc](http://www.uscg.mil/nsarc)), Chapter 1, discusses risk assessment and some available models and checklists that can be used or adapted for SAR.



## **National Incident Management System**

*Mandatory Use*

*Resources*

*Unity*

*Incident Commander*

*SAR System*

### **Mandatory Use**

As indicated in the NRF, the National Incident Management System (NIMS) is to be used for ESF-9 operations; all Federal departments and agencies must adopt and implement NIMS where applicable.

### **Resources**

The NRF, Chapter 3, discusses the NIMS core concepts, principles, terminology, and technologies, and explains how NIMS is applied in relation to Federal, State, local and tribal response organizations. Information and training for NIMS is available from FEMA and other sources.

### **Unity**

Unity of command requires a clear understanding of the roles of participants. Unity of effort requires seamless coordination across jurisdictions, while respecting the chains of command of the participating organizations. Familiarity with the NIMS concepts and principles is essential to the seamless integration of the CIS 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 Incident Commander (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**

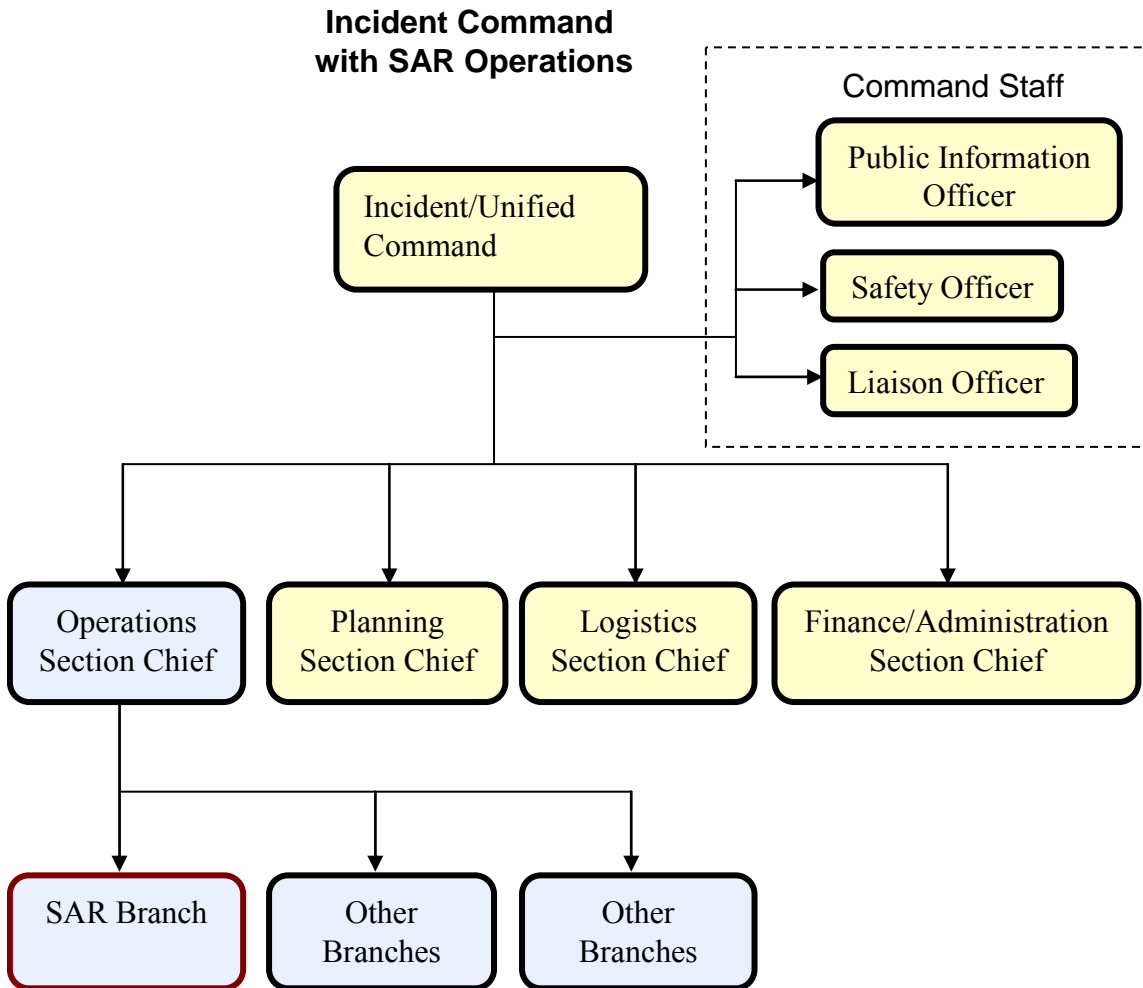
When the IC is designated, the SMC function will be placed under the umbrella of the NIMS organizational structure, typically as the SAR Branch Director or SAR Group Supervisor in the Operations Section. The CIS response system “plugs into” the NIMS organizational structure, where the SMC (or someone designated by the SMC to carry out this function) serves as the “plug” or link. The CIS response may also include an On Scene Coordinator (OSC) and an Aircraft Coordinator (ACO).

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

For CIS operations, the SMC and OSC would normally be assigned by the appropriate Primary Agency identified in ESF-9.

To the extent practicable, consistent with NIMS and the IC's Incident Action Plan

(IAP), CIS operations should be carried out in accordance with the normal planning, command and control, procedures, and terminology provided for in the NSM and associated documents.





## **CIS Management**

*Key Guidance for CIS Operations*

*NIMS and the SAR Mission*

*SAR-related Job Descriptions*

*Transition from CIS Operations*

### **Key Guidance for CIS Operations**

The NSP, IAMSAR Manual and NSM are largely based on international law that U.S. SAR services are obligated to follow. These documents 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 documents for CIS, 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 SAR operation. Examples of such non-SAR operations include search and recovery, salvage, investigation, fire-fighting, pollution response, etc.

For large incidents that actually or potentially involve both SAR and non-SAR activities, the SMC, who is designated by the IC, will initiate action and coordinate the overall SAR response in accordance with the documents mentioned above and NIMS.

(Note: The USCG Incident Management Handbook is widely used by Federal agencies (available at [www.uscg.mil/nsarc](http://www.uscg.mil/nsarc)); Chapter 13 deals specifically with SAR within the context of a major incident.)

### **NIMS and the SAR Mission**

As stated in the previous section on NIMS, when the IC is designated, the SMC function will be placed under the umbrella of the NIMS organizational structure, typically as the SAR Branch Director or SAR Group Supervisor in the Operations Section.

### **SAR-related Job Descriptions**

*Incident Commander (IC)*. The IC of an incident that includes CIS operations other than US&R must recognize that the SMC is obligated to carry out the SAR mission in accordance with the NSP and associated guidance (no SMCs are identified with US&R operations). The SMC (or someone designated by the SMC for this function) serves as the link between the SAR system and the NIMS organization and is best placed at the Branch Director or Group Supervisor level.

The IC may also 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 warrant it or the IC is not thoroughly familiar with all SAR system processes. For large CIS incidents that actually or potentially include other non-SAR activities, IC tasks may include:

- Standing up the Incident Command Post (ICP) 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);
- Immediately 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
- Follow relevant fatigue standards when scheduling SAR units.

*SAR Mission Coordinator (SMC).* The RCC or IC will designate (usually pre-designate) a position or individual to serve as SMC. Under the IC's general direction, the SMC coordinates the CIS response in accordance with the NSP and associated documents. SMC responsibilities typically include:

- Gathering available information about the distress situation(s);
- Dispatching SAR units (SRUs);
- Conducting search planning and rescue planning, and developing Search Action Plans and Rescue Action Plans;
- Assigning one or more OSCs and aircraft coordinators (ACOs) as warranted;
- Re-evaluating the information and (1) modifying the search plan; reassigning SRUs, if necessary; and conducting a subsequent search or (2) suspending search operations if further efforts are unlikely to be successful;
- Optimizing use of available SAR resources, coordinating supplies and other supporting equipment; and if necessary asking the IC for additional appropriate resources;
- Arranging for and coordinating the use of lily pads and places of safety with appropriate authorities; and
- Accounting for all rescued survivors until they are delivered to a place of safety, and for all passengers and crew if the event is a transportation incident.

*On Scene Coordinator (OSC).* The OSC coordinates the SAR mission on scene using resources made available by the IC (via the SMC) and should safely carry out the SAR Action Plan in accordance with the NSP and associated documents. The OSC may also serve as a Branch Director or Group Supervisor to manage on scene operations other than SAR, particularly after the CIS mission is concluded and other missions take precedence, such as search and recovery. OSCs typically:

- Establish and maintain communications with the SMC;
- Assume operational control and coordination of all SRUs assigned until relieved or mission is completed;
- Establish and maintain communications with all SRUs using assigned on scene channels;
- Require all aircraft to make "operations normal" reports to the OSC:
  - 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 facilities at suitable intervals to monitor status, personnel safety, fatigue, operators with limited training or experience, area hazards, and density and diversity of types of facilities being used.)

- Establish 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);
- Obtain necessary information from arriving SRUs, provide initial briefing and search instructions, and provide advisory air traffic service to aid pilots in maintaining separation from one another;
- 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 all sighting reports, and divert SRUs to investigate sightings;

- Obtain search results from departing SRUs; and
- Submit sequentially numbered situation reports (SITREPs) to the SMC at regular intervals.

### **Transitioning from CIS Operations**

For some incidents, the CIS response will be completed or suspended by the time the NIMS structure is fully in place. As the SAR mission winds down, the IC may designate the OSC in the SAR response system to also serve as a Branch Director or Group Supervisor in the NIMS structure to manage on scene operations other than SAR. Likewise, SAR Units (SRUs) may also be reassigned to other groups in the NIMS structure once the SAR mission is concluded.

Personnel with SAR responsibilities should receive sufficient ICS training to enable them to carry out their respective duties in ICS response organizations.

## Notice and No-Notice Events

### *Pre-event Opportunities*

### *Preparations*

### *Pre-Event Actions*

#### **Pre-event Opportunities**

Notice events, such as approaching hurricanes, provide responders with some time to predict the response demands, pre-position SAR facilities, 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 hours or days available before an expected event to maximize the success of post-event efforts. Such pre-event activities are discussed below.

#### **Preparations**

Before a notice event actually occurs, SAR authorities should:

- Review the communications plan;
- Update the readiness status of available SAR resources;
- Designate the SAR mission coordinator (SMC);
- Track the status of evacuations
- Monitor the storm or other threat; and
- Review the Search Action Plan and Rescue Action Plan.

#### **Pre-Event Actions**

To further prepare ahead of a pending notice event, the following actions may be taken:

- Issue standby orders;
- Keep all status reports up-to-date;
- Inform key authorities of intended SAR actions;
- Prepare the RCC/Command Center;
- Review and brief reporting procedures;
- Arrange for landing of aircraft and refueling and support of all SAR facilities;
- Ensure that no SAR command and control issues are left unresolved;
- Implement plans for supplemental personnel and resources;
- Pre-position SAR facilities;
- Ensure that charts and grids are ready to be used;
- Determine what Temporary Flight Restrictions (TFRs) will be required. Arrange for TFRs to be implemented at the appropriate time;
- Ensure that any prudent evacuations of personnel and equipment are implemented that otherwise would compound subsequent SAR operations;
- Prioritize Spot SAR or initial reflex locations, and carry out spot SAR operations just before or just after the event as appropriate; and

- Identify and ensure that lily pads and places of safety are ready.

## CIS Searches

*Overview*

*Rapid Search (Hasty Search)*

*Primary Search*

*Secondary Search*

*Reluctant Survivors*

*Probability of Detection*

*Deceased Persons*

### Overview

The search terms discussed in the following paragraphs are particularly useful during CIS operations involving populated land or flooded areas and are familiar to most ICs and State, local and tribal responders. For these reasons, Federal CIS responders should be familiar with and use these terms and concepts.<sup>1</sup>

While the focus of this Section is on search concepts, obviously the intent is to conduct as many rescues as possible while the search operations continue, and SAR units may need to continually switch between conducting search operations and rescue operations, especially during the hasty search when many persons are in distress.

Various search planning methods, sensors, search dogs and other means may be used as appropriate for the searches discussed below.

<sup>1</sup> These search terms are not normally used for national or international civil SAR; nor for CIS operations involving aeronautical or maritime distress situations.

(Note: See the Section on “Notice and No-Notice Events” for guidance on preparations that can be made before the time to commence searching.)

Most CIS 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)

A rapid search is conducted as soon as possible with the intent of saving as many lives as possible as quickly as possible by targeting high probability locations and by quickly sweeping the area to find readily identifiable survivors. Emergency Plans should address how rapid searches will be conducted for likely scenarios.

Rapid searches also help to determine the scope, nature and magnitude of the CIS operations that will be needed.

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

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

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 SAR facilities arrive on scene, SAR personnel conduct reconnaissance and assessments throughout the rapid search. Reconnaissance

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

*Special Response Teams.* Special Response Teams (SRTs) may be used, especially during the rapid search, to respond to large concentrations of persons or persons with special needs in known locations. 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. These teams target places that should be 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).

### **Primary Search**

Following the rapid search a primary search is conducted (should be completed within 48 hours). The primary search is typically conducted by surface SAR responders and 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 there is 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 the “Marking Structures” Section), document the results and can call for air, water 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; this may be affected by the condition and situation of the survivor.

### **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.

### **Probability of Detection**

The probability of detecting survivors is affected by factors such as the search pace, the team size and capabilities, environmental factors, and available sensors to use to aid detection. These variables will have to be controlled or accounted for in order to determine the probability that if one or more survivors had been in the 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 searches of the area.

### **Deceased Persons**

While discovered bodies would typically be documented with recovery of bodies postponed during hasty and primary searches, body recovery operations would likely commence concurrently with SAR operations during secondary searches.

SAR personnel should be instructed on how to arrange for body recoveries as they continue efforts to locate and assist survivors (See “Deceased Persons and Next-of-Kin” Section).

(Note: Response personnel should be aware that deceased persons may pose potential health risks.)



## **Communications**

*NIMS Communications*

*Communications Plan*

*Communications Plan Contents*

*Communications Plan Owners*

*National Interoperability Field Operations Guide (NIFOG)*

*ESF-2 (Communications)*

*Other Interoperability Standards*

*SAR Frequencies*

### **NIMS Communications**

Communications issues pertinent to CIS operations and integration of CIS 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 Plans**

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

No CIS operation can succeed without effective arrangements for communications; this requires a plan. CIS communications requirements cannot be met without the right types and amounts of communications capabilities available at the right places, at the right time, installed and supported, with appropriately trained communications

personnel. This will not happen without a plan.

A communications plan is a written document that 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.

### **Communications Plan Contents**

A communications plan must provide for a heavy volume of communication use, as a CIS incident will normally involve many responding organizations that need to communicate effectively with each other from the beginning. Advance arrangements should be made to link means of interagency communications that are not inherently interoperable. Interagency communications must be based on terminology that all involved understand. The communications

plan is needed to network a typically broad array of means of communications together successfully.

A communications plan should encompass objectives, goals, and tools for all communications and may include:

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

### **Communications Plan Owners**

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. In assessing communications needs, a good starting place is the National Interoperability Field Operations Guide (NIFOG) discussed below; it provides a framework for interoperable communications.

### **National Interoperability Field Operations Guide (NIFOG)**

The DHS/Office of Emergency Communications (NIFOG - 2007) is a pocket-sized guide that is a collection of technical reference material for technicians responsible for radios that will be 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.

### **ESF-2 (Communications)**

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 first 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**

The following table provides information on SAR frequencies found in the NIFOG.

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; 156.800 (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. 345.0 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 USAF SAR
VHF Marine Channels	6, 9, 15, 16, 21A, 23A, 81A, 83A

## **Aircraft Management**

*Introduction*

*Air Operations Branch*

*Aircraft Coordinator*

*Aircraft Separation*

*Use of Aircraft for SAR*

*Risk Management*

*Aircrew Fatigue*

*Flight Safety*

*Helicopters*

### **Introduction**

A key element in conducting safe CIS operations is effective and safe management of aviation SAR resources. Aircraft safety is a major concern. The confluence of many helicopters and fixed-wing aircraft conducting multiple sorties in a potentially confusing urban or rural environment greatly increases the risk of a mid-air collision. Search planners must be able to coordinate air SAR responders and ground SAR responders to ensure effective use and safety of each.

### **Air Operations Branch**

The National Incident Management System (NIMS) provides for the optional establishment of an Air Operations Branch. The Operations Section Chief of the Incident/Unified Command may establish an Air Operations Branch as warranted by nature of the incident and the availability of

air assets. An Air Operations Branch is valuable when the complexity of air operations requires additional support and effort or when the incident requires mixing tactical and logistical use of helicopters and other aircraft.

The Air Operations Branch oversees all aircraft operations related to the incident, not just operation of the air SRUs.

Flight safety is a paramount concern in complex operations and supports the requirement to ensure the de-confliction of assets and the integration of safety considerations into planning and carrying out missions.

Air Operations Branch staff may include a supervisor, a tactical group, helicopter coordinator, fixed-wing coordinator, and other staff as needed.

The Branch establishes and operates bases for rotary-wing air assets and maintains

required liaison with off-incident fixed-wing bases. It is also responsible for timekeeping for aviation assets assigned to the incident.

### **Aircraft Coordinator**

In addition to the Air Operations Branch, if established, the SAR Mission Coordinator (SMC) may assign an Aircraft Coordinator (ACO) to help maintain safe and effective use of air SAR units (SRUs) on scene.

An ACO is a person, team or facility that coordinates the involvement of multiple aircraft in SAR operations to support the SMC or On Scene Coordinator. It is a supporting and advisory service. The ACO's function is discussed in Volume 2 of the IAMSAR Manual.

ACOs must be familiar with planning and conducting search operations using several aircraft at once.

The ACO function will normally be performed by the facility with the most suitable mix of communication means, radar, and plotting combined with trained personnel to effectively coordinate the involvement of multiple aircraft in SAR operations while maintaining flight safety. However, duties of the ACO may be carried out from the ICP, emergency operations center, a fixed-wing aircraft, ship, etc.

If carried out at the ICP, the ACO would normally be located along 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 the SAR aircraft. Obviously, ACO duties will have to be closely coordinated with the Air Operations Branch 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 (example: 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; and work closely with the OSC.

### **Aircraft Separation**

For missions with multiple air SRUs 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 periods of time maintain appropriate separation.

### **Use of Aircraft for SAR**

Lifesaving has priority over all other aircraft missions. Delivery of vital supplies may also become a high priority as well.

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

The pilot will always be the final judge of SRU capability during a mission.

The SMC/OSC/ACO should be aware of the specifications of the aircraft to be used during CIS Operations; this will allow the SMC/OSC/ACO to make informed decisions when allocating SAR resources.

There are many, sometimes conflicting factors to consider prior to making a final decision about where to place the CSP in an

aircraft's assigned search area. Each SRU should carefully evaluate the search action plan (SAP) to ensure CSPs and pattern orientations 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.

Although communications between the OSC and SMC should always be immediately available, OSCs are usually authorized in the SAP to make necessary changes as long as the SMC is informed. When planning search areas, consider the following:

- Orientation of aircraft SAR 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 must be conducted, the aircraft's CSP is typically 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, replenishment location, etc.);
- When planning an aircraft search pattern, consider the direction 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, OSC and aircraft commanders continuously make operational decisions during CIS operations. As missions progress, each must weigh and continually reassess the urgency of each

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. SAR personnel safety is crucial to being able to continue SAR operations. The full scope of assets available to support the mission and promote mission safety should be considered.

For SAR missions, 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.

The possibility of saving human life warrants a maximum effort. When no suitable alternatives exist and the mission has a reasonable chance of success, the risk of damage to or abuse of the aircraft is acceptable.

### **Aircrew Fatigue**

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

Stressors like constant vibration, loud noises from machinery and radios, illness or poor physical conditioning, improper diet, and irregular or insufficient sleep patterns can create both immediate and long-term (i.e., chronic) fatigue.

Any decrease in a flight crew member's ability to function normally will increase the likelihood of error. This influence becomes particularly significant during operations at night or in poor weather conditions.

### **Flight Safety**

Effective aviation safety is an attitude, not an add-on. For aviation safety to be truly effective, safety must be a pervasive notion supported by the incident command leadership; safety is a team effort focusing

on operations and engineering with the common goal of improved operational performance by reducing mishap losses.

Most aviation mishaps are preventable and are usually the result of human error, mechanical failure or a series 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.

CIS operations are important, but the safe conduct of aircraft operations will ensure that timely, crucial lifesaving will not be interrupted by a tragic aircraft mishap.

Even during CIS operations, where significant hazards to aircraft safety can and will occur, these hazards need to 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**

Helicopters are excellent resources for searches; maneuverability and outstanding visibility for search scanners make helicopters ideal for closely checking sightings. They are generally excellent rescue platforms, capable of recovering persons from a wide variety of distress situations on land and water.

SAR helicopters should generally have the following capabilities:

- Hover;
- Hoisting/winch;
- Delivery of de-watering pumps;
- Confined area landing;
- Direction finding;
- Night illumination;
- Search radar; and

When available, helicopters can use fire suppression kits, rescue swimmers and emergency medical technicians, night vision goggles; and forward-looking infrared or other sensors.

## **Boat Operations Management**

*Introduction*

*Boat Operations Branch*

*Health and Safety*

*Boat Operations*

*Boat Crews*

*CIS Preparation*

*Points to Consider in Flooding Scenarios*

### **Introduction**

Boat operations are a vital part of CIS operations. Responses from the water involve unique challenges and present major safety concerns for boat crews. Boat operations place crews in the middle of incidents such as flooding or large passenger ship catastrophes. Boat crews must be familiar with the best practices learned from past incidents and be capable of an effective response.

### **Boat Operations Branch**

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

The Boat Operations branch would oversee all boat operations related to the incident, not solely limited to the operations of boat SRUs.

### **Health and Safety**

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;
- Unsanitary vessel spray and water splash are both real possibilities. Boat crews 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 any 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
- Access to mental health counselors and stress management professionals can be of great benefit in supporting CIS responders.

### Decontamination

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

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

Freshwater wash down may not be simple to accomplish as local water sources may be contaminated.

### 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 CIS 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 CIS 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 the CIS Searches and Structural Marking Systems Sections of this Addendum.

As a result 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 CIS 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 fully 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 which may sometimes fail.

In all boat operations, the final decision authority for the safety of the mission rests with the vessel'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.

### **CIS Preparation**

Situations cannot be predicted which is why training and maintenance are so vital to preparing for CIS operations. Boat crews must train and remain ready to respond at all times. Knowledge and skill fade without regular application.

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 CIS 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 and does cause damage to the inflatable cells;
- Air boats can be very 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);
- Extra Personal Flotation Devices (PFDs) are required for every boat and should be worn by all rescue personnel; consideration should give to providing PFDs to those being rescued. (include X-large and small sizes as well);
- 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 and operate under the expectation that there will be 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 CIS operation.

## **Temporary Flight Restrictions**

*Definitions and Types*

*Requests and Issuance*

*Proportions*

### **Definition and Types**

A Temporary Flight Restriction (TFR) is an airspace prohibition implemented for a specified amount of airspace, 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, a 14 CFR 99.7 TFR was used during the Katrina response for helicopter refueling tracks and to coordinate aviation operations for the Gulf area. The President visited New Orleans and along the Gulf Coast requiring 14 CFR 91.141 TFRs (must be requested by the Secret Service) and CIS operations required 14 CFR 91.137 TFRs.

### **Requests and Issuance**

While only the FAA may issue a TFR, various entities may request one, including: 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 Office, and aviation or 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.)

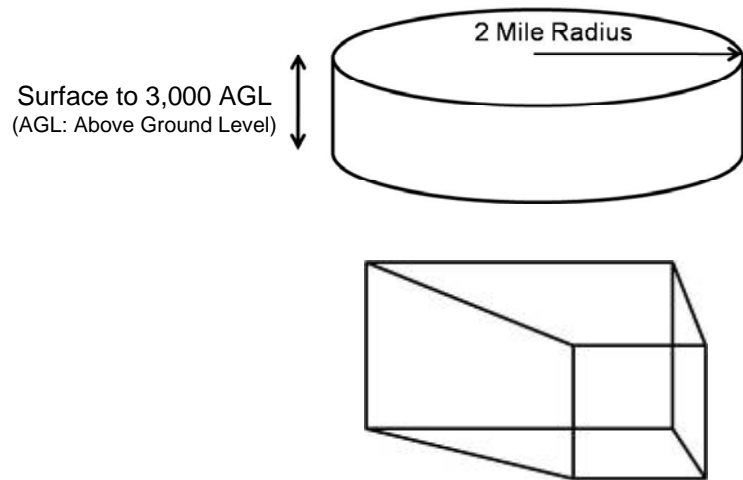
FAA authorities should contact their respective service area representative for non-emergency requests, the cognizant air route traffic control center for emergency requests and the System Operations Support Center (SOSC) for VIP or security TFRs.

Note: Information or assistance for TFRs 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.

### Proportions

TFRs can be issued as a cylinder based on a point, a polygon or other shapes; the point or corners of the TFR are identified by latitude and longitude, and/or a fixed radial distance from a navigational aid. 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 space.

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



## Operational Messages

*Situation Reports (SITREPS)*

*Search Action Plans (SAPs)*

*Search Action Message*

*Rescue Action Plans (RAPs)*

*Five-line Brief*

SAR operations messages include Situation Reports (SITREPs), search action messages, rescue action messages, “all ships” broadcasts, aircraft alerting messages, and other SAR messages. 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 to confirm this fact.

More information on SITREPs and their contents, including sample formats, is available in the IAMSAR Manual, Volume 2, Chapter 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.

## Search Action Message

After a SAP is developed, it is provided to the OSC and SAR facilities on scene in a search action message. The message should include:

- A summary of the on scene situation, including the nature of the emergency;
- What to search for (search object(s));
- 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 message early. If a "first light" search is being planned; parent agencies providing SAR facilities should typically receive the message at least six hours before departure time if practicable, bearing in mind that the message can be expanded or amended later.

The message normally describes the situation, search areas, detailed search instructions that will provide for safe and effective searches by the facilities on scene, instructions for communications, and reports required of the OSC.

## Rescue Action Plans (RAPs)

In conjunction with the SAP, the SMC may then develop a RAP. It is provided to the OSC and SAR facilities on scene in a rescue action message. The parts of the message are similar to the search action message, with search instructions replaced with rescue directions.

## Five-Line Brief

Especially for large-scale CIS 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 is a voice data message that contains the following information:

<b>Five Line Brief</b>
Number of persons for rescue
Conditions of persons (ambulatory, liter, etc.)
Location: Latitude/Longitude (DD MM.MMM/DDD MM.MMM)
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: litter*

*Line 3: 36°01.334N 114°43.450W*

*Line 4: hoist*

*Line 5: large 150 foot tower to the south*

## **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 services response found that different SAR agencies used different methods to communicate geographic information, adding confusion and complexity to an extremely large scale SAR operation.

Volunteer, local, State, Federal and military SAR responders working together in a CIS 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 SAR responders navigate when landmarks such as street signs and homes are blown away?
- 2) How do SAR responders communicate position in a common language?
- 3) The final problem is SAR resource de-confliction - the ability to ensure multiple assets are not inappropriately

operating in the same area –a significant problem for SAR 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 SAR 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).

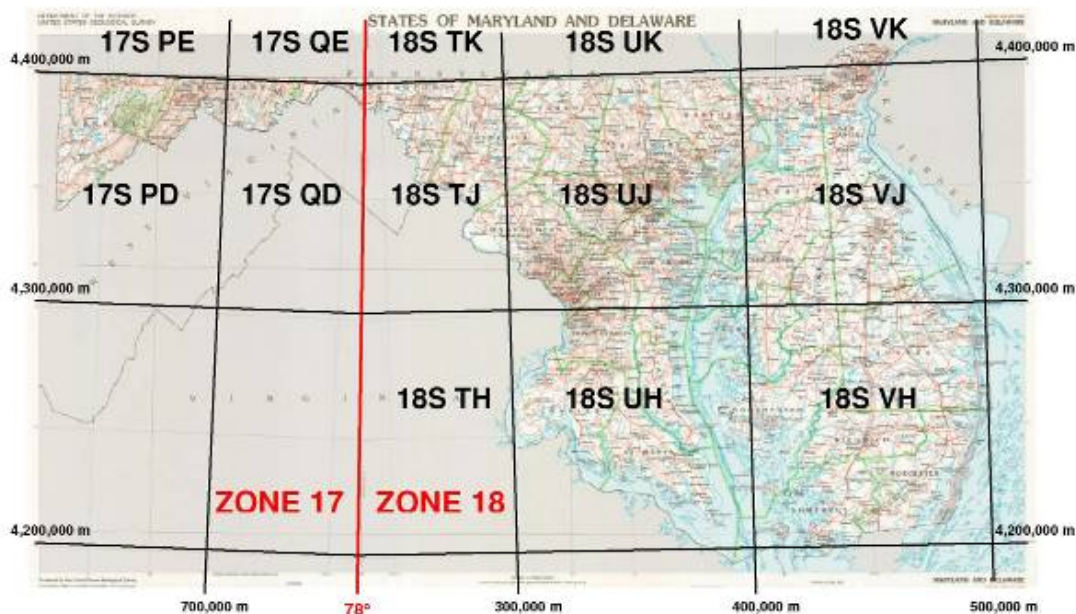
## Geo-Referencing Methods

Three geo-referencing methods are to be used for CIS 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.

United States National Grid  
100,000 Meter Grid with GZD Zone Designator



# 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.

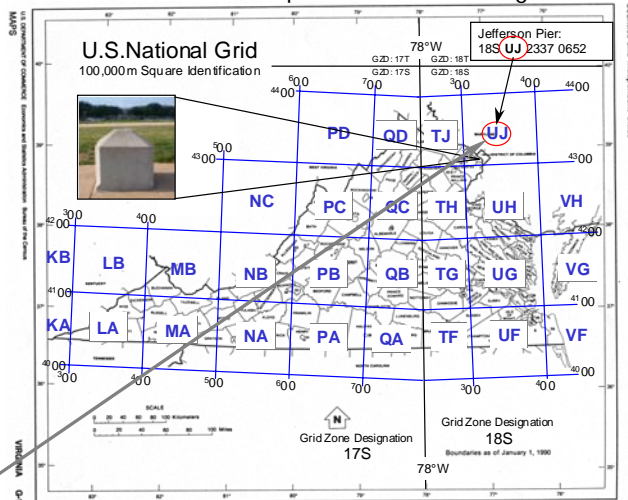
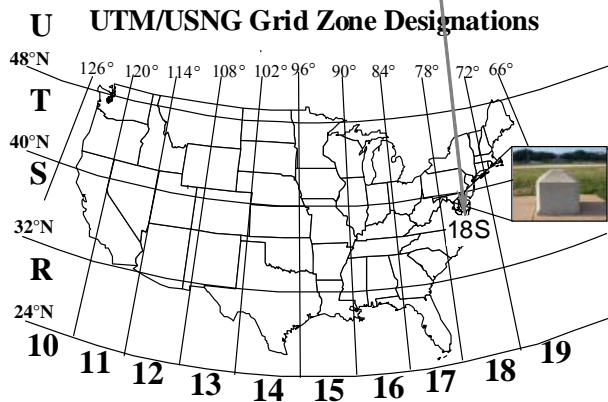
**Grid Zone Designation (GZD):**  
6° x 8° longitude zone / latitude band.  
**100,000-m Square Identification:**

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

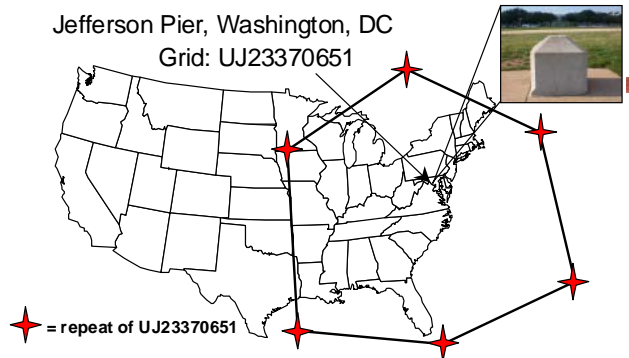


100,000-m Square Identifications  
Example: UJ

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](http://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	← information in a grid reference box.
<sup>43</sup> 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:**

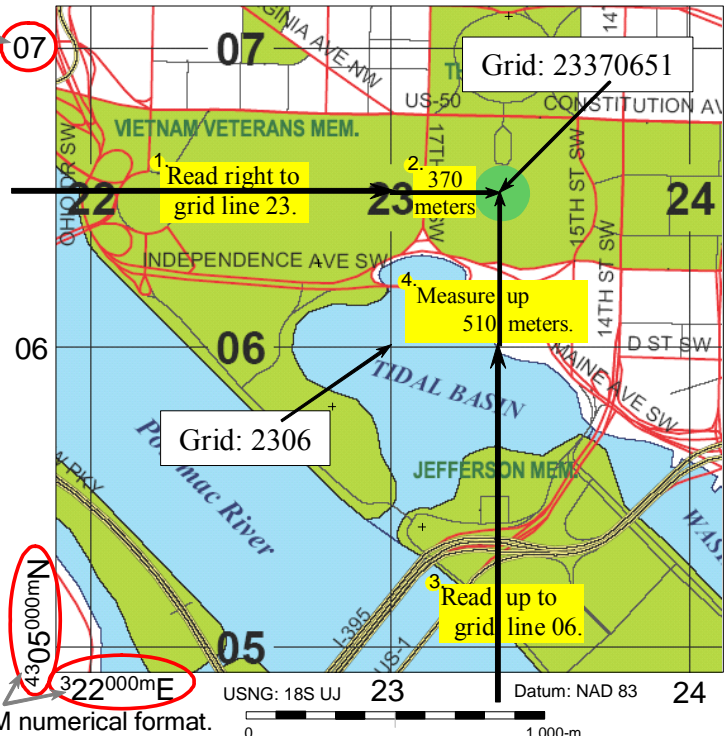
Read right, then up ↑

"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)



Grid:	Point of Interest:
228058	FDR Memorial: +
231054	George Mason Memorial: +
2338 0710	Zero Milestone: +
2275 0628	DC War Memorial: +
222065	Lincoln Memorial:

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	Locating a point within a 1,000-m square.
	Six digits:	233 065	Locating a point within a 100-m square (football field size).
	Eight digits:	2337 0651	Locating a point within a 10-m square (modest size home).
	Ten digits:	23371 06519	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:
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

The Latitude-Longitude system is used for locating positions on the Earth's surface by the crossing of lines of latitude and longitude. Lines of Latitude are the horizontal lines shown running east-to-west on maps.

Latitude is an angular measurement in degrees (marked with °) ranging from 0° at the Equator (low latitude) to 90° at the poles (90° N for the North Pole and 90° S for the South Pole). Longitude is the east-west (side to side) geographic coordinate measurement most commonly used in cartography and global navigation. Longitude is given as an angular measurement ranging from 0° at the prime meridian to +180° eastward and -180° westward.

## 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.

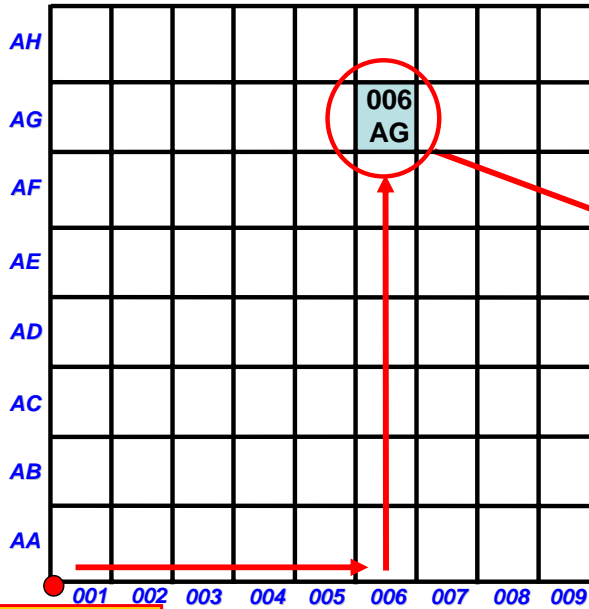
Each 5-minute by 5-minute area or keypad "key" is identified by a seven-character designation. The first six characters comprise the 15-minute quadrant designation. The seventh character is the keypad "key" number. (ex.006AG39).



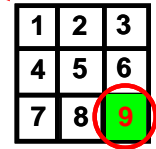
Cell to Quadrant to Keypad yields 5 min x 5 min cell;  
takes advantage of existing 1:100K and 1:50K charts

Each Cell Is 30 min x 30 min  
1:100,000 charts = 30 min x 30 min

Each Cell Is  
Sub-Divided Into Four  
15 min X 15 min Quadrants  
1:50,000 charts = 15 min x 15 min



Each Quadrant Can Be  
Further Sub-divided  
Into Nine 5 min X 5 min  
Keypads

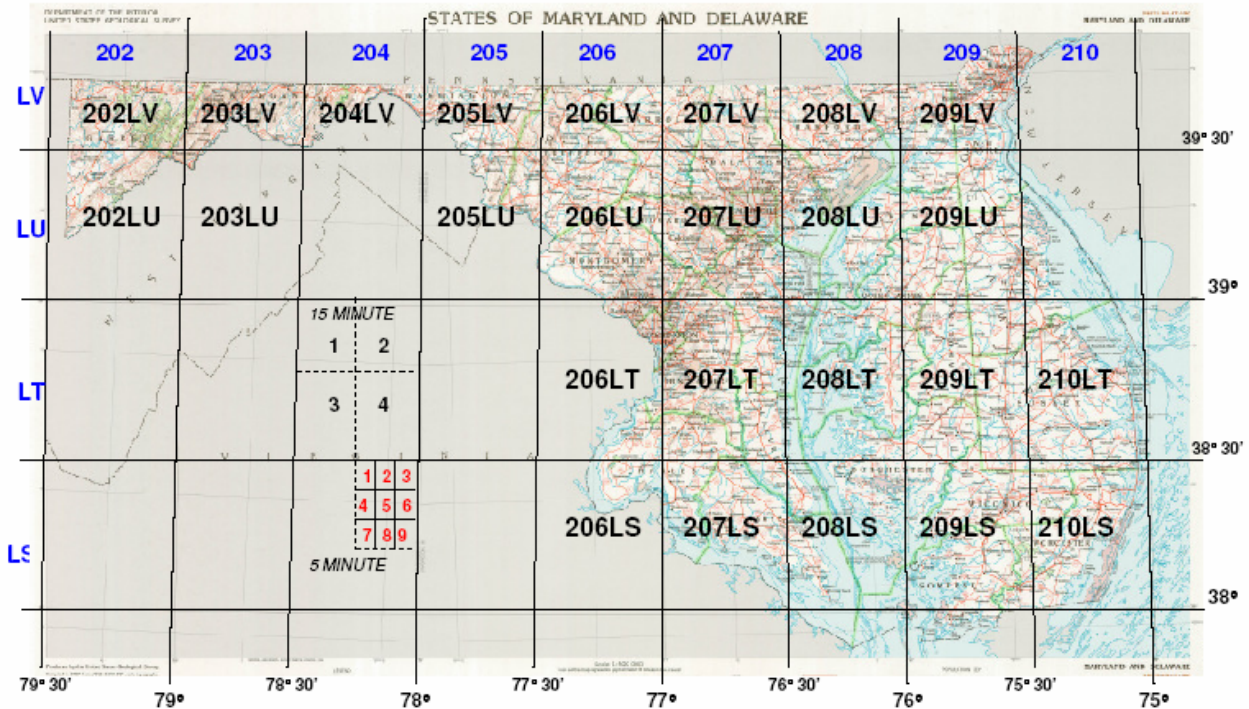


006AG39

Current 1:50,000 chart has  
symbology "+" to denote  
5 x 5 keypads

Origin Point  
180 E/W & 90S

Global Area Reference Grid (GARS)  
30 Minute x 30 Minute Grid



### **Geo-referencing matrix**

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

referencing requirements, effective interface between each component is vital to a successful CIS response.

The geo-referencing matrix minimizes confusion and provides guidance on what geo-referencing system each SAR 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  
CIS Geo-referencing Matrix

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

<sup>1</sup> During CIS operations (and to avoid confusion) Latitude and Longitude should be in one standard format: DD-MM.mmm. If required, use only 3 digits to the right of the decimal; 1 or 2 digits are acceptable. If required, allow 3 digits in the degrees field for longitude (i.e., DDD-MM.mmm). 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: Not Recommended: 09-00.300N 004-02.450W; Recommended: 9-0.3N 4-2.45W).

<sup>2</sup> GARS: Global Area Reference System.

<sup>3</sup> Land SAR responders *must* 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).

<sup>4</sup> Aeronautical SAR responders will use latitude and longitude for CIS 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.

<sup>5</sup> Air space deconfliction will *only* be implemented and managed using Latitude and Longitude.

<sup>6</sup> 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.

<sup>7</sup> Describes the requirement for providing situational awareness of CIS operations geographically to Federal, military, state, local and tribal leadership.

## Structural Marking Systems

### *Objective*

*FEMA Building Marking System*

*United Nations Marking System*

### **Objective**

In a Catastrophic Incident, Federal, State, local and volunteer SAR responders must have uniform, standardized system for marking buildings or other structures to indicate the status of searched structures. Having a common search marking system reduces the possibility of redundant searches.

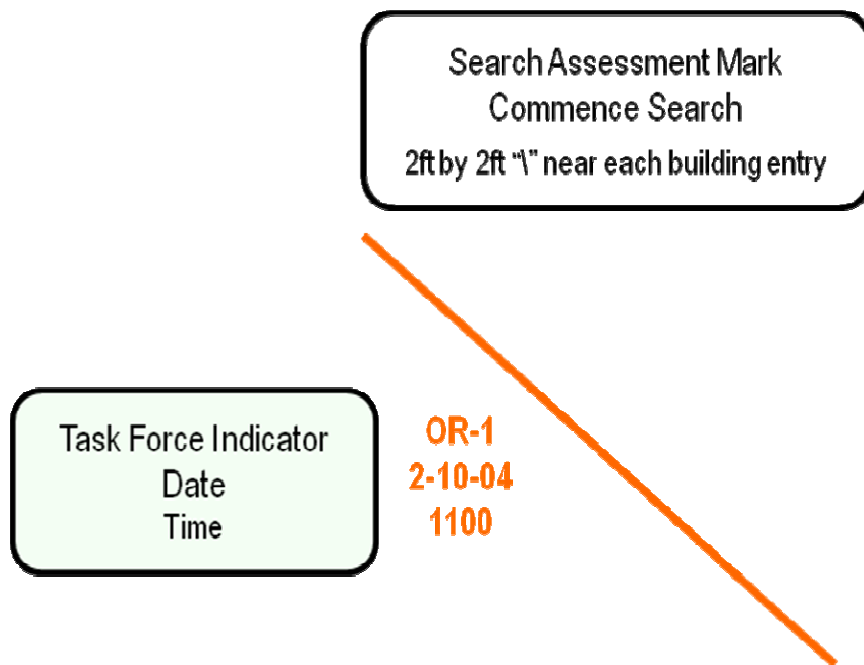
Markings will be made with orange paint, black markers or lumber crayons. For wide

area searches, a peel and stick form available from FEMA US&R can be used.

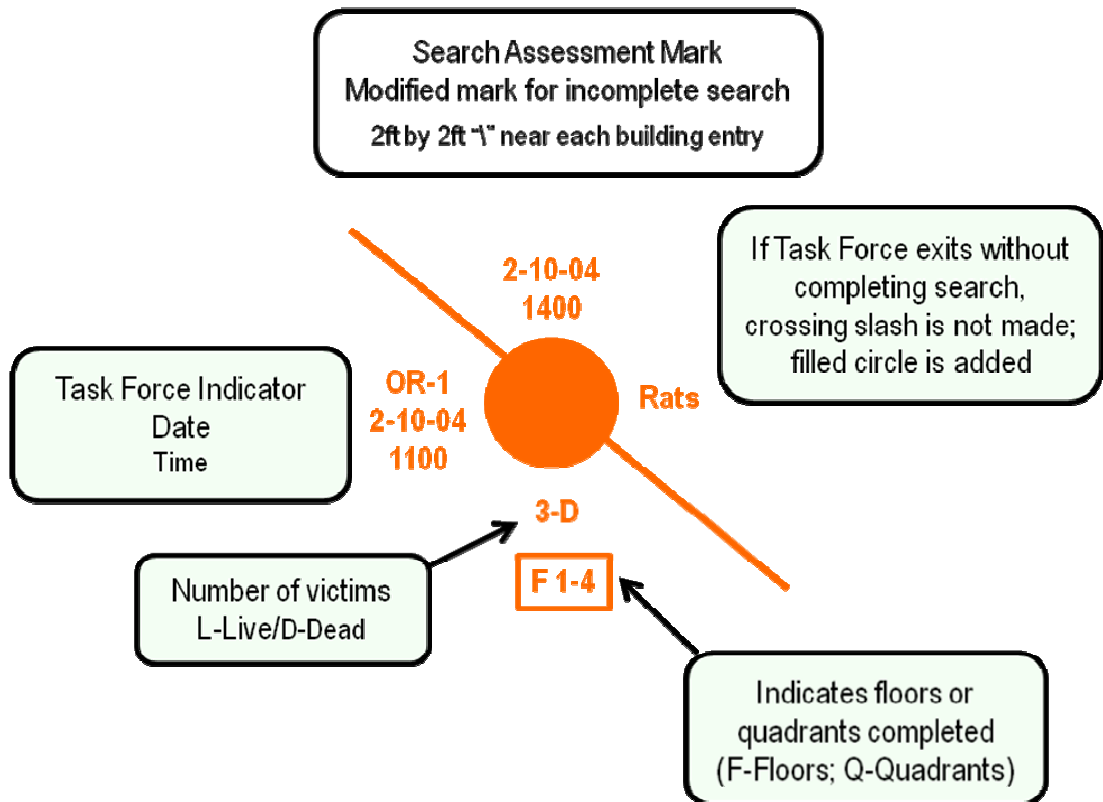
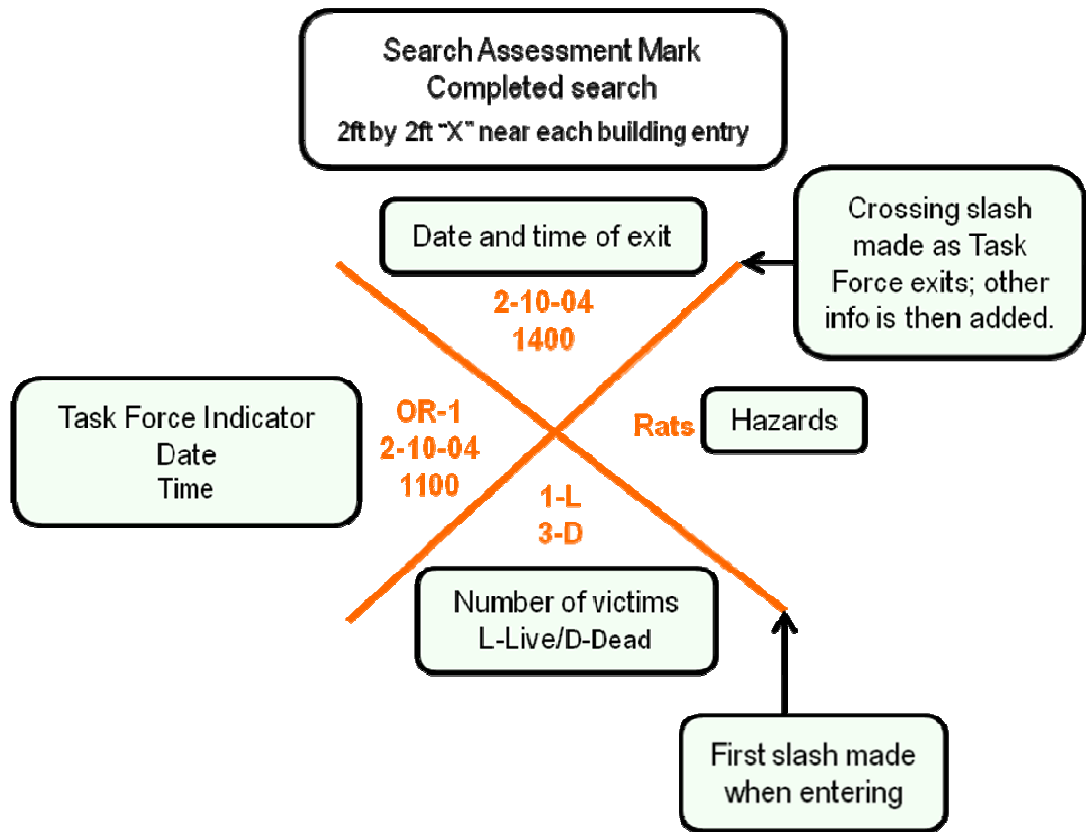
The Incident Command can choose one of two available structural marking systems, depending on the needs of the particular situation. Both systems are simple and effective.

### **FEMA Building Marking System**

In the United States, markings on searched structures are used on the fronts of structures and are standardized as follows:







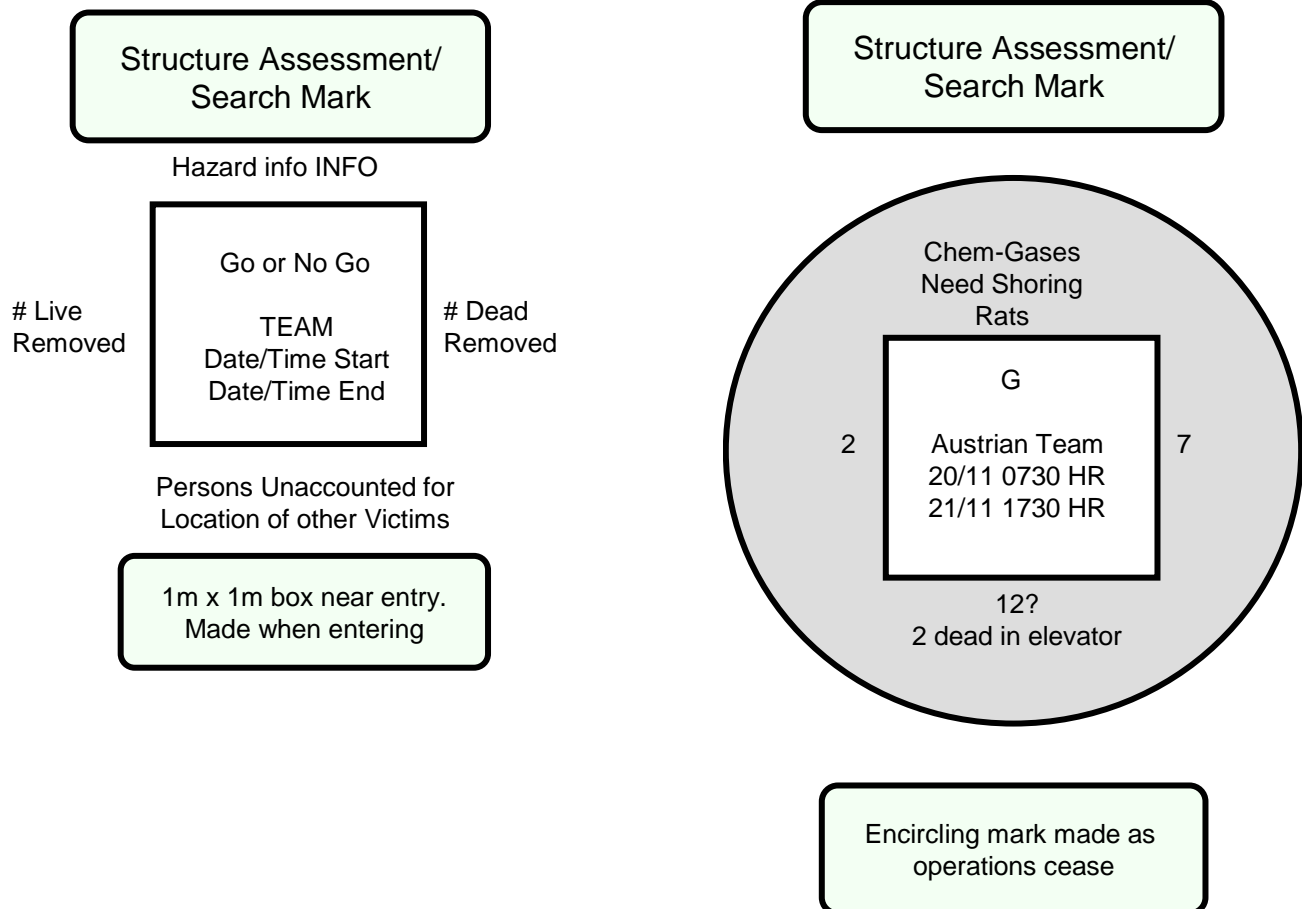
## United Nations Marking System

Outside of the United States, markings on searched structures usually use the United Nations International Search and Rescue Advisory Group (INSARAG) marking system. This system is an option for an IC to prescribe nationally as well:

- 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.



## **Delivery of Survivors**

*Places of Safety*

*Lily Pads*

*Lilly Pad Services*

*Lilly Pads: State and Local Responsibility*

*Support Responsibility*

### **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; certain needs of rescue personnel and their facilities might be handled at lily pads.

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 from an immediately hostile environment, and secondary SAR facilities, such as local police and ambulance services can then transfer survivors to medical care centers.

Use of lily pads can help CIS 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.

### **Lilly Pads: State and Local Responsibility**

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

SAR authorities must arrange with State or local authorities via the Incident Commander for establishment and support of lily pads (if they are used) and places of safety when these are needed for particular CIS operations. It is important to avoid, if possible, delivering survivors to locations where their needs for care and further transportation cannot be met.

SAR authorities are normally responsible for transport of survivors from lily pads to places of safety; however, the Incident Commander 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, local and tribal plans should be clear on how this should be handled.

### **Support Responsibilities**

State or local authorities are normally responsible for the welfare of survivors once they are delivered to a place of safety.

Depending on the extent to which a lily pad or place of safety will be used, State or local authorities will usually need to appoint a person to facilitate and oversee all services for lily pads and places of safety.

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, Emergency Assistance, 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.

## **Suspension or Termination of SAR Operations**

*Criteria*

*Decision*

*Termination*

*Suspension*

### **Criteria**

Based on international treaties and the NSP, civil SAR operations shall normally continue until all reasonable hope of rescuing survivors has passed. (Note: There is no expectation of remains recovery by SAR forces.) The IAMSAR Manual, Volume 2, Chapter 8, further discusses terminating, suspending and re-opening SAR cases.

### **Decision**

In accordance with the NSP and the IAMSAR Manual, the SAR SMC shall normally recommend to the IC when to discontinue SAR operations; this person has the training and experience to make and defend these sometimes difficult decisions objectively based on the facts of the case. If no SMC is involved, the OSC or Incident Commander may make this decision. If there is no OSC involved, the decision will be made at an appropriate level of the chain-of-command of the facility conducting the operations. Within the context of CIS operations, the IC will make the final decision taking into account the SMC's recommendation.

Often external pressure (i.e. political, families of unaccounted for victims, etc.) may insist that CIS 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 SAR operations progress so that people not directly involved clearly understand the level of SAR effort that has been expended and that the probability of success of further operations is negligible.

Chapter 5 of the IAMSAR Manual, Volume 2, indicates that the decision about whether to continue SAR 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 facilities to continue the search.

Chapter 8 of this Manual provides substantial additional guidance, including discussion on re-opening suspended searches.

### **Termination**

When the SMC or other appropriate authority considers, on the basis of reliable information, that a rescue operation has been successful, or that the emergency no longer exists, the SMC shall terminate the SAR

operation and promptly so inform any authority, facility or service which has been activated or notified.

### **Suspension**

If an operation on scene becomes impracticable and the RCC/RSC or other appropriate authority concludes that survivors might still be alive, it may temporarily suspend on scene activities pending further developments, and shall promptly so inform any authority, facility or service which has been activated or notified. Information subsequently received shall be evaluated and operations resumed

when justified on the basis of such information.

Only those agencies designated as U.S. SAR Coordinators (i.e., the USCG for maritime regions) have the authority to suspend a SAR case. The IC may continue the SAR mission beyond the time when a case would normally be suspended due to humanitarian considerations, large number of people involved, or forecast of greatly improved search conditions. However, SAR Units (SRUs) should not be risked when the potential for saving life is minimal, or when their use may preclude their availability for other missions.

## 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.

Children can feel very frightened during a disaster; afterwards some children will 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.

SAR responders during CIS operations need to understand the following factors that 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 their 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.<sup>1</sup>

#### **Signs of Trouble in Children**

CIS 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.

<sup>1</sup> FEMA and American Red Cross, *Helping Children Cope with Disaster*, article online at: <http://www.fema.gov/pdf/library/children.pdf>.

- 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 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.
- Encouraging children to talk about their feelings concerning what's happening; encourage children to ask questions;
- Helping children understand what causes their anxieties and fears, recognize their losses (such as pets and toys), and reassuring them that everything will be all right;
- Keeping children informed about what is going on; and
- Holding and hugging them.

### **Helping Children Cope**

Subject to parental involvement and permission and if available, SAR responders can help children cope by:

- Spending time with them;



## Persons with Special Needs

*Vulnerability and Risks*

*Special 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

CIS responders should be diligent to look for persons who may be unable to help themselves or even to call for help. When SAR responders find people with special needs they should carefully assess and not worsen the situation. CIS responders should:

- Be sensitive and reassuring;

- Handle person(s) with special needs with extra care;
- Be alert to taking important medicines or service 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 may require mass rescue operations.

Some possible medical challenges for CIS responders are identified in the following table:<sup>1</sup>

<sup>1</sup> Table modified for use by CIS responders; table is found online at: <http://www.fema.gov/plan/prepare/specialplans.shtm>.

Disability/Special Need	Challenge to the CIS 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; CIS responders teaming with proper medical support may be the best option.

### Special Response Teams

SRTs may be used to support evacuations of large or small numbers of persons with special needs, usually early in the CIS operation, or persons who require special handling such as prisoners. Before the event, State 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 (i.e. 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 IC 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.

## **Deceased Persons and Next of Kin**

### *References*

### *Non-Search and Rescue*

### *Involvement of SAR Forces*

### *Preparations*

### *Other Considerations*

### *Next of Kin*

### **References**

For more on handling deceased persons (human remains), see the IAMSAR Manual, Volume 2, Chapter 6 and the USCG Addendum to the National SAR Manual, Chapter 1.

### **Non-Search and Rescue**

By definition, SAR solely involves finding and assisting persons in distress. Handling human remains is not normally considered to be part of SAR operations.

### **Involvement of SAR Forces**

Handling of human remains by CIS responders may at times be necessary. SAR resources are sometimes best suited for recovering bodies and are sometimes used for that purpose on a non-interference basis with CIS operations. Also, persons in distress may expire either before aid can be rendered to them or after they have been rescued. Proper handling of such situations may benefit persons affected by the loss of life.

### **Preparations**

Searching for and recovering bodies should be conducted according to applicable laws and regulations as much as possible.

SAR authorities should make prior arrangements with other authorities concerned with removal and disposal of human remains (often law-enforcement agencies) and to coordinate transfer of the remains. Where victims are citizens of other States or nations outside the affected area, it may be necessary to coordinate transfer of the remains, possibly via diplomatic channels for non-U.S. citizens.

SAR authorities may also need to have plans and agreements in place with other entities to handle human remains. Generally such arrangements should be part of State, local and tribal emergency plans, and SAR authorities need only know the appropriate contacts. Because such local capabilities may be compromised by the catastrophic event, effective contingency plans should be in place for this purpose. Availability of body bags or other relevant resources may be wise.

## Other Considerations

Human remains at an aircraft crash site should not be disturbed or removed without authorization from the SMC except for compelling reasons. The SMC would obtain authorization from an appropriate authority, usually associated with aircraft accident investigations.

Without exposing rescuers to danger, an attempt should be made to identify deceased persons. All articles removed from or found near each body must be kept separate, preferably in a container so labeled that it can be correlated later with the body. All these articles should be handed over to the proper authority as soon as possible.

Handling of human remains can be traumatic. CIS responders need to be informed on proper body removal procedures; after their involvement, counseled as appropriate to help meet emotional needs.

If it is known or suspected that a deceased person had an infectious disease, all material and objects which have been in direct contact with the deceased person must be cleaned and disinfected or destroyed.

## Next of Kin

USCG Addendum, Chapter 1 and Chapter 13 of the USCG Incident Management Handbook, Chapter 13 can provide guidance on working with Next-of-Kin (NOK).

For CIS operations, the IC rather than the SMC will be responsible for coordinating NOK notifications and support.

Some matters that should be prepared for include:

- Arranging nearby lodging for arriving NOK;
- Coordinating with transportation companies involved with an accident, such as a plane crash, or with the military in the case of deceased military personnel;
- Conducting daily NOK briefings;
- Using qualified local authorities, clergy and organizations who know what to do and what to avoid to help with NOK notifications;
- Handling of presumption-of-death cases; and
- Providing family counseling.

## Animals

*Animal Categories*

*General Guidance*

*Service and Companion Animals*

*Transportation Risks*

*Livestock, Wildlife and Captive Animals*

*Practical Advice for SAR Responders*

*Animal Response Teams*

### Animal Categories

Animals in the categories indicated below may be encountered during CIS operations:

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. <sup>1</sup>
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. <sup>2</sup>
Livestock/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.

<sup>1</sup> Disaster Assistance Policy DAP9523.19: *Eligible Costs Related to Pet Evacuations and Sheltering* (24 Oct 2007)

<sup>2</sup> Department of Justice, *Americans with Disabilities Act (ADA)*, 42 USC 1201 et seq, implementing regulations at 28 CFR 36.104

## General Guidance

No animal rescue activities should be attempted by SAR personnel 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 list of qualified animal rescuers to act as responders before a disaster strikes and keep the list current.

(Note: Non-SAR personnel who will assist with animal rescues should be included in relevant planning and exercises.)

State, local and tribal plans should provide for handling and care of rescued animals.

The final decision about animal rescue by CIS responders should be made by the person in charge of the SAR facility.

## 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 animal will be able to be retrieved later and reunited with its owner.

If service or companion animals cannot be rescued along with their owners, SAR personnel should provide information on the animals and their location so they can be subsequently recovered by SAR forces or animal rescue services and rejoined with their owners. Local animal control officials may be able to provide trained and equipped personnel to assist with animal control and rescue, including for aggressive and difficult-to-access animals and unusual or exotic pets such as snakes.

*Identifying Service Animals.* Some, but not all service animals wear special collars and harnesses. Some, 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.

## Transportation Risks

Transport of animals in SAR facilities can pose a problem, depending upon the size, health and temperament of the animal(s). The SAR facility should not be placed at increased risk to rescue an animal.

## Livestock, Wildlife and Captive Animals

There are many situations where livestock, wildlife or captive animals might be encountered during CIS operations; sound judgment needs to be exercised in dealing with such animals. For example, animals

that are an apparent threat to human safety should be reported and avoided, or be confined, sedated or killed if necessary. Livestock or confined animals might be able to avoid threats such as fire or flooding if they were free; the simplest solution may simply be to release these types of animals for capture later. Advice should be sought via the Incident Command as necessary.

### **Practical Advice for SAR Responders**

- 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, protect your head; curl into a ball with your hands over your ears and remain motionless.

- If attacked or bitten, use dog 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.
- 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 source of information about organizations that can assist with animal rescue and care needs.

Also, through the HSUS, the National Disaster Animal Response Team (NDART):

- Serves 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
- Assists with animal rescue, handling, and transport.

## **Media and Public Relations**

*Introduction*

*Relationships*

*NIMS*

*Public Information Officer*

*Joint Information Center*

*Media On Scene*

*Media On Scene*

### **Introduction**

During CIS operations, the public and media should be informed - within the limits of confidentiality - of ongoing SAR 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 SAR resources;
- Fewer time-consuming requests from the news media; and
- Reduction in inaccurate public speculation about the CIS operation.

A CIS operation often creates great interest with the general public and with radio, television and newspapers.

IAMSAR Manual, Volume 2, Chapter 1, and FEMA's NIMS training, have considerable information relevant to media and public relations for SAR responders; this information can help enhance response effectiveness and avoid troublesome mistakes.

### **Relationships**

SAR-related contacts with media, which can take many forms, are normally the responsibility of managers or public affairs specialists, but may also be delegated to the RCC, or as is often the case for CIS, assigned to a Joint Information Center (discussed below). It is important to establish a good relationship between the media and the RCC or Primary Agency to ensure that information reaching the public is factual and complete. This relationship should be established prior to any major incident. The responsible CIS 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 to family members of those in distress. During the search, the SMC or staff should maintain regular contact with the 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 search operations even if the missing persons are not located.

Ensure that the media knows who is in charge of coordinating rescue operations.

### **NIMS**

There are two NIMS provisions to help the IC and SMC manage the flow of public information: 1) the Public Information Officer (PIO); and 2) the Joint Information Center (JIC).

#### **Public Information Officer (PIO)**

The PIO is a key member of the command staff. The PIO advises the IC on all 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)**

One way to ensure the coordination of public information is by establishing a JIC. Using the JIC as a central location, information can be coordinated and integrated across jurisdictions and agencies, and among all government partners, the private sector, and nongovernmental agencies. Coordination is required to ensure there is one message with many messengers. Prompt establishment of a JIC away from the SMC will help to achieve this goal. The center can establish proper procedures for establishing what messages will be released to the public and how those messages will be released. Since the messages 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 around the clock. 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.

Media outlets may have more resources to mobilize on scene than do SAR authorities; the SMC should account for how to deal with such situations.

## **Chemical, Biological and Radiological Incidents**

*Overview*

*Terrorism*

*General Guidance*

### **Overview**

CIS operations may be conducted within the context and environment associated with a chemical, biological, or radiological/nuclear (CBR/N) incident, which may have been caused either by accident or act of terrorism. In such situations, CIS 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.

The following Sections provide additional information relevant to CBR/N threats to responders.

Relevant emergency plans should always identify available specialized teams that can be used to assist with CIS operations within a CBR/N environment.

Many Federal, State and local agencies and organizations have such teams; however, their immediate availability varies from location to location.

For example, a primary source for such assistance is the National Guard, which can mobilize Civil Support Teams (CSTs). CSTs assess suspected weapons of mass

destruction (WMD) attacks, advise civilian responders on appropriate actions through on-site testing and expert consultation, and facilitate the arrival of additional State and Federal military forces. The CST provides rapid detection and analysis of chemical, biological, and radiological hazards agents at a WMD incident scene. CSTs are trained for CBR/N and explosive response, and can provide advice on event mitigation, medical treatment, follow-on resources, and other response concerns to the IC.

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

### **Terrorism**

Terrorism is 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.

### **General Guidance**

CIS responders should rely on police, fire, and other officials for instructions, and be prepared as they would be for responding to other types of catastrophic incidents. They should also:

- Be aware of surroundings; and
- Move or leave if uncomfortable or if something does not seem right.

## Chemical Incidents

*Nature of Chemical Incidents*

*Indicators of Chemical Agents*

*Chemical Incident Symptoms*

*Chemical Incident Decontamination*

*CIS Response to a Chemical Incident*

*Contacts*

### Nature of Chemical Incidents

Chemical agents are poisonous vapors, aerosols, liquids, and solids that have toxic effects on people, animals, or plants<sup>1</sup>.

Chemical agents:

- Can be released by bombs or sprayed from aircraft, boats, and vehicles;
- Can be used as a liquid to create a hazard to people and the environment;
- May be odorless and tasteless; and
- Can 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.

<sup>1</sup> FEMA, "Are You Ready?" Guidance on Chemical Threats; available online at [http://www.fema.gov/areyouready/chemical\\_threats.shtm](http://www.fema.gov/areyouready/chemical_threats.shtm) (Updated: 21 Mar 2006).

### Indicators of Chemical Agents

The following may indicate the presence of chemical agents:

<b>Possible Indicators of Chemical Agents:</b>
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, or 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 to 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 require within minutes of exposure to minimize health consequences, or as soon as possible if not accomplished immediately. 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

### CIS Response to a Chemical Incident

The first concern must be to recognize a chemical event and protect the CIS responders. Unless CIS 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.

With any reason to believe that chemical agents may be present:

- Approach scene cautiously from upwind,<sup>2</sup> resist the urge to rush in; others cannot be helped until the situation has been fully assessed;

<sup>2</sup> Department of Homeland Security, *WMD Response Guidebook (LSU)*, (2006) Version 3.3.

- 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, a spill, or a 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);
- Respond.
  - 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; and
  - The first duty is to consider the safety of the people in the immediate area, including your own.
- Above all:
  - 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;
  - 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) 1-800-424-9300; 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) 1-800-255-3924; 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) 1-800-424-8802;

- Military shipments: for assistance in incidents involving materials being shipped by, for, or to DOD, call one of the following 24 hour numbers:
  - 703-697-0218 (call collect; U.S. Army Operations Center) for incidents involving explosives and ammunition; or
  - 1-800-851-8061 (toll free) (Defense Logistics Agency) for incidents involving dangerous goods other than explosives and ammunition.

## Biological Incidents

*Nature of Biological Incidents*

*Indicators of Biological Agents*

*What to Do*

*CIS Responder concerns*

### Nature of Biological Incidents

Biological agents are organisms or toxins that can kill or incapacitate people, livestock, and crops.<sup>1</sup> 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 very long lived.

Delivery methods include:

- *Aerosols* (biological agents are dispersed into the air, forming a fine mist that may drift for miles. Inhaling the agent may cause disease in people or animals);
- *Animals* (some diseases are spread by insects and animals, such as fleas, mice, flies, mosquitoes, and livestock);
- *Person-to-person* (spread of a few infectious agents is also possible. Humans have been the source of infection for smallpox, plague, and the Lassa viruses.); and

- *Food and water contamination.* Some pathogenic organisms and toxins may persist in food and water supplies. Most microbes can be killed and toxins deactivated by cooking food and boiling water.

Specific information on biological agents is available at the Centers for Disease Control and Prevention's website ([www.bt.cdc.gov](http://www.bt.cdc.gov)).

### Indicators of Biological Agents

The following indicators may signify the presence of biological agents:

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.

<sup>1</sup> FEMA, "Are You Ready?" Guidance on Biological Threats; available online at [http://www.fema.gov/areyouready/biological\\_threats](http://www.fema.gov/areyouready/biological_threats); (Updated: 23 March 2006).



## **What to Do**

In some situations (i.e., Anthrax letters sent in 2001), people 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.

## **CIS 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.

First responders must be protected from the hazard prior to treating victims. Planning for

response to terrorist acts must include provisions for appropriate personal protective equipment for CIS responders. 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. Use protective clothing or commercially available Level C clothing. 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 and 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 by other diagnostic means used by medical personnel.

## **Radiological Incidents**

*Overview: Radiological Dispersion Device (RDD)*

*Overview: Nuclear Weapon Detonation*

*CIS Operations after RDD Detonation*

*Protecting the Injured and Exposed after RDD Detonation*

*CIS Operations after Nuclear Device Detonation in an Urban Area*

*Protecting the Injured and Exposed After Nuclear Weapon Detonation in an Urban Area*

*Symptoms of Radiation Exposure*

*Contacts*

### **Overview: Radiological Dispersion Device (RDD)**

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. An RDD combines a conventional explosive device - such as a bomb - with radioactive material. It is designed to scatter dangerous and sub-lethal amounts of radioactive material over a general area. Such RDDs appeal to terrorists because they require limited technical knowledge to build and deploy compared to a nuclear device. Also, the radioactive materials in RDDs are widely used in medicine, agriculture, industry, and research, and are easier to obtain than weapons grade uranium or plutonium.

The primary purpose of terrorist use of an RDD is to cause psychological fear and economic disruption. Some devices could cause fatalities from exposure to radioactive materials. Although, 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, the type of radioactive material used, the quality and quantity of the radioactive material and the 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: Nuclear Weapon Detonation**

A nuclear blast is an explosion with intense light and heat, a damaging pressure wave, and widespread radioactive material that can

contaminate the air, water, and ground surfaces for miles around. A nuclear device can range from a weapon carried by an intercontinental missile launched by a hostile nation or terrorist organization, to a small portable nuclear device transported by an individual. All nuclear devices cause deadly effects when exploded, including blinding light, intense heat (thermal radiation), initial nuclear radiation, blast, fires started by the heat pulse, and secondary fires caused by the destruction.

*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:

- Size of the device. A more powerful bomb will produce more distant effects.
- Height above the ground the device was detonated. This will determine the extent of blast effects.
- Nature of the surface beneath the explosion. Some materials are more likely to become radioactive and airborne than others. Flat areas are more susceptible to blast effects.
- Existing meteorological conditions. Wind speed and direction will affect arrival time of fallout; precipitation may wash fallout from the atmosphere.

*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.

*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.

For CIS responders: An EMP can seriously damage electronic devices connected to power sources or antennas. This includes communication systems, computers, electrical appliances, and automobile or aircraft ignition 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.

### **CIS Operations after RDD Detonation**

While the explosive blast will be immediately obvious, the presence of radiation will not be known until trained personnel with specialized equipment are on scene. CIS responders must be cautious: It would be safer to assume radiological contamination has occurred - particularly in an urban setting or near other likely terrorist targets - and take the proper precautions.

As with any radiation, you want to 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, CIS responders must protect themselves. The following precautions must be followed:

- 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 your clothing. Remove and discard it after you leave the 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. 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. Beware of heat strain.
- If radiation measuring instruments are available, place them in plastic bags to prevent their contamination and use them to map the areas leading up to the highest dose rates. Do not enter the areas of highest dose rate except to save lives, and then make the entry as brief as possible.

### **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. Carry out the following immediate response actions 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.

### **CIS Operations after Nuclear Weapon Detonation in an Urban Area**

- Stay away from ground zero. Enter the surrounding area only to save lives. The radiation levels will 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. Remove and discard it after you leave the 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. 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.
- Beware of heat stress.
  - 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.
  - 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 Nuclear Weapon Detonation in an Urban Area**

- 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 their outer clothing, 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).<sup>1</sup>

### **Symptoms of Radiation Exposure**

Acute exposure to a single, large dose of radiation can result in: gastrointestinal disorders; bacterial infections; hemorrhaging; anemia; loss of body fluids; cataracts; cancer; and in extreme cases, death can occur within hours to weeks.

Chronic exposure to low-level radiation can lead to a wide variety of health outcomes, including: genetic alterations; precancerous

---

<sup>1</sup> Information on Acute Radiation Syndrome (ARS) can be found at the Center for Disease Control website: <http://www.bt.cdc.gov/radiation/ars.asp>.

lesions; tumors; cataracts; skin changes; and cancer.

### **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.

## Exercises

*Purpose*

*Objectives*

*Planning*

### **Purpose**

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

### **Objectives**

CIS 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 means (e.g., IC-RCC; RCC-RCC, government-industry, agency-agency, IC-OSC, on scene, shore-ship, ground-air, ship-air, and SAR facility-survival craft);
  - 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;
  - Joint information center 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.