

E/L 0964

# NIMS ICS All-Hazards Situation Unit Leader Course



FEMA

## Student Manual

June 2019  
Version 1.0



*FEMA Geographic Information Systems (GIS) Unit Manager and GIS Situation Unit Leader look at a map printed at the Joint Field Office.*

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## Table of Contents

Unit 1: Course Introduction.....	5
Supplemental Materials .....	15
Unit 2: Overview of the Planning Section and the Incident Action Planning Process .....	23
Supplemental Materials .....	29
Unit 3: Situation Unit Overview .....	35
Supplemental Materials .....	53
Unit 4: Information .....	71
Supplemental Materials .....	93
Unit 5: Display Processing.....	111
Supplemental Materials .....	135
Unit 6: Advanced Display Processing .....	203
Supplemental Materials .....	219
Unit 7: Staffing and Organizing.....	231
Supplemental Materials .....	253
Unit 8: Incident Situation Status Reports .....	261
Supplemental Materials .....	267
Unit 9: Planning Meetings and Briefings .....	275
Supplemental Materials .....	281

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# Unit 1: Course Introduction

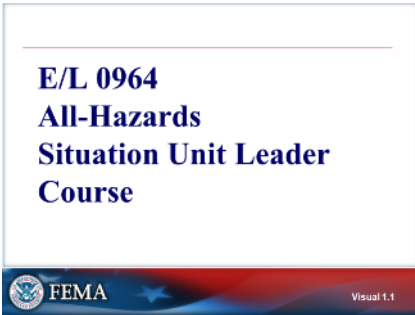
STUDENT MANUAL

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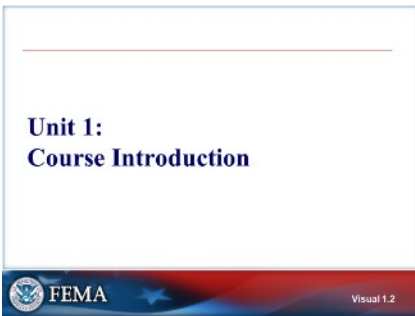
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Visual 1.1

## E/L 0964 ALL-HAZARDS SITUATION UNIT LEADER COURSE



Visual 1.2

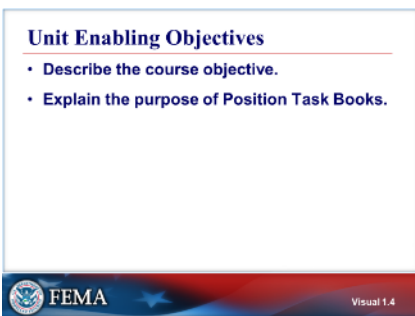
### UNIT 1: COURSE INTRODUCTION



Visual 1.3

### UNIT TERMINAL OBJECTIVE

Identify course objectives and position-specific resource materials for the position of Situation Unit Leader.

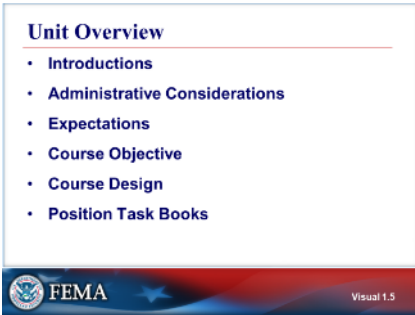


Visual 1.4

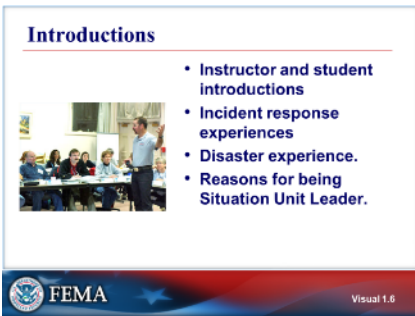
### UNIT ENABLING OBJECTIVES

- Describe the course objective.
- Explain the purpose of Position Task Books.

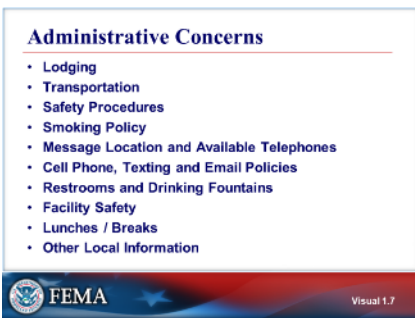
The Pretest and Final Exam are based on the Unit Enabling Objectives from Units 2 - 9.



Visual 1.5



Visual 1.6



Visual 1.7

## UNIT OVERVIEW

Through this unit, students will learn the objectives of the course, be instructed on the use and purpose of Position Task Books, and receive Situation Unit Leader versions of these resources.

## INTRODUCTIONS

The instructor gives an overview of their personal experience as a Situation Unit Leader and the agencies in which they have worked.

You will be asked to introduce yourself and provide an overview of your incident response experiences and ICS background as well as your reasons for wanting to be a Situation Unit Leader.

After the introductions, the instructor will administer the Pretest.

## ADMINISTRATIVE CONCERNS

- Lodging
- Transportation
- Safety Procedures
- Smoking policy
- Message location and available telephones
- Cell phone, texting, and email policies
- Restrooms and drinking fountains
- Facility safety
- Lunches/Breaks
- Other local information

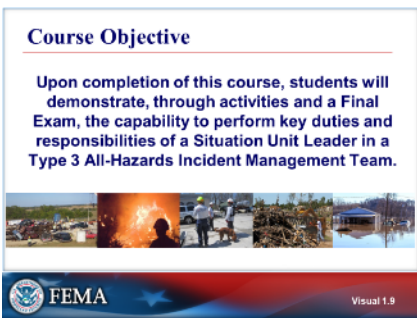




Visual 1.8

## EXPECTATIONS

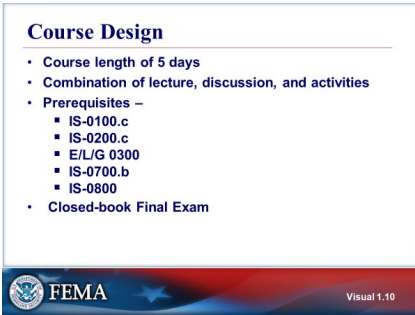
Share your expectations for the course.



Visual 1.9

## COURSE OBJECTIVE

Upon completion of this course, students will demonstrate, through activities and a Final Exam, the capability to perform key duties and responsibilities of a Situation Unit Leader in a Type 3 All-Hazards Incident Management Team.



Visual 1.10

## COURSE DESIGN

The course is scheduled to be 5 days in length. Through a combination of lecture, discussion, and activities, students, upon course completion, will be provided the knowledge to meet the objectives of the course. Student interaction and participation will be integral to this process.

The course materials were developed as a position-specific course focusing on the duties and responsibilities of one member of IMT (in this course, Situation Unit Leader) in an all-hazards context.

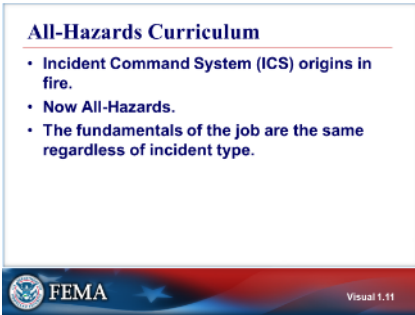
### Prerequisites -

- IS-0100 An Introduction to the Incident Command System, ICS 100
- IS-0200 Basic Incident Command System for Initial Response, ICS 200
- E/L/G 0300 Intermediate Incident Command System for Expanding Incidents, ICS 300
- IS-0700 An Introduction to the National Incident Management System
- IS-0800 National Response Framework (NRF)

### Recommended -

- E/L/G 0191 Emergency Operations Center/Incident Command System Interface
- E/L/G 0400 Advanced Incident Command System for Complex Incidents, ICS 400

**Final Exam -** To receive a certificate of completion for the course, students must obtain a 75% or higher on the Final Exam. The Final Exam will be closed-book, one hour will be allotted for its completion, and the Final Exam's questions will be based on the Unit Enabling Objectives for Units 2 - 9. Unit 1 will not be tested in the Pretest nor the Final Exam.



Visual 1.11

## ALL-HAZARDS CURRICULUM

NIMS ICS All-Hazards Position Specific training was born out of the terrorist attacks on the World Trade Center and the Pentagon on September 11, 2001 and was reinforced by the natural disasters of Hurricanes Katrina and Rita in 2005.

These incidents underscored the need for the nation's emergency managers and first responders to develop an improved posture for preparedness, prevention, mitigation, response, and recovery through an "all hazards" strategy. At the core of this realization is the need for standardized training in systems and performance competencies that enable emergency management and response resources to execute the essential tasks needed to overcome any challenge.

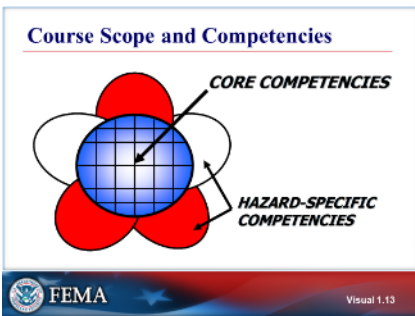
The curriculum was validated by a diverse cadre of course developers with backgrounds as Situation Unit Leaders. Given our personal incident experiences, each of us, instructors included have a limited perspective (by no means all-hazards).

A Situation Unit Leader needs to fundamentally possess the same core knowledge, skills, and abilities whether they are responding to a fire, an oil spill, a mass-casualty incident, or other incident. In other words, regardless of the hazard, discipline, or incident, the essential job of a Situation Unit Leader is the same.

Therefore, students should not be deterred if one "hazard" from the list is spoken to more than another. Students can still obtain critical insight to the position and should add examples from their own disciplines to the discourse.



Visual 1.12



Visual 1.13

## DISCUSSION ACTIVITY

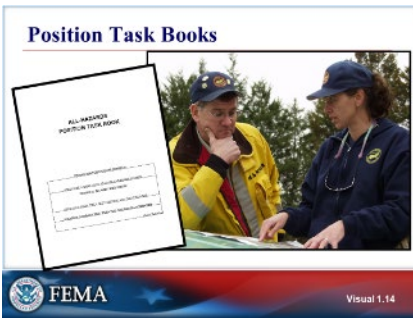
## COURSE SCOPE/COMPETENCIES

Competency is a broad description that groups core behaviors necessary to perform a specific function. The Flower Diagram illustrates the concept that successful performance of the tasks, duties, activities in any position requires both core and incident-specific competencies.

### Key Points:

- Core competencies are the competencies required of a Situation Unit Leader regardless of discipline.
- Hazard-specific competencies are those required to perform in a particular discipline, such as law enforcement, fire, public health, HAZMAT, EMS, public works, etc.
- The center of the flower represents the core competencies of the position.
- The petals represent the hazard-specific competencies associated with specific disciplines.
- You cannot be competent as a Situation Unit Leader with only the center of the flower or only the petals—"The flower needs to be complete" to ensure qualification.

This course will help to establish core competencies (center of the flower) for the Situation Unit Leader position. The hazard-specific competencies will have to be developed through additional agency or discipline training, field training, and the completion of the Situation Unit Leader Position Task Book, discussed on the next visual.



Visual 1.14

## POSITION TASK BOOKS

PTBs are the primary tools for observing and evaluating the performance of trainees aspiring to a new position within ICS. PTBs allow documentation of a trainee's ability to perform each task, as prescribed by the position. Successful completion of all tasks is the basis for recommending certification.

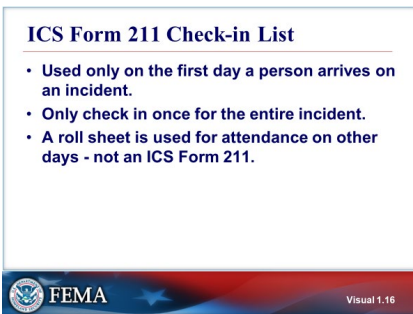


Visual 1.15

## ACTIVITY 1.1: IDENTIFY POSITION FUNCTIONS

The instructor will explain Activity 1.1.

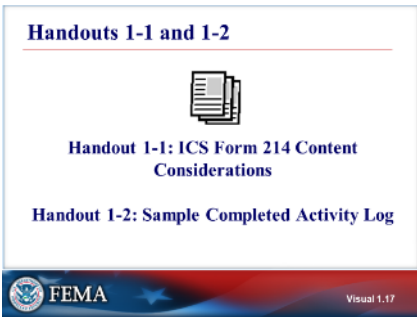
You will have 15-30 minutes to complete the activity.



Visual 1.16

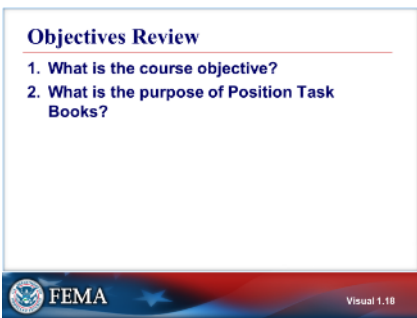
## ICS FORM 211 CHECK-IN LIST

An ICS Form 211 is used only on the first day a person arrives on an incident. They only check in once for the entire incident. A roll sheet is used for attendance on other days - not an ICS Form 211. The ICS Form 211 are tools used to manage incident check in. These are used by the Planning Section Chief, the Resource Unit Leader, and the Status Check-in Recorder. It is not the role of the Situation Unit Leader to maintain the ICS Form 211, but they should be familiar with its use in an incident. It is the student's responsibility to check-in each day.



Visual 1.17

## HANDOUTS 1-1 AND 1-2



Visual 1.18

## OBJECTIVES REVIEW

- Describe the course objective.
- Explain the purpose of Position Task Books.

# Supplemental Materials

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## Activity 1.1: Identify Position Functions

### Activity 1.1 Overview—Unit 1

#### Purpose

This activity will familiarize students with a position's functions as defined in a position task book (PTB).

#### Objectives

Students will:

- Identify functions performed as part of their job that match the responsibilities of the IMT position.
- Be able to identify basic requirements of the IMT position as identified in the Position Task Book.

#### Activity Structure

This activity is scheduled to last approximately 30 minutes, including small group discussion and presentation of group findings. Students will review the Position Task Book (PTB) associated with this course and identify their current job responsibilities that are like those identified in the PTB. This analysis should stay at the Competencies level. Each group will present their findings to the rest of the group.

#### References

**FEMA's National Qualification System (NQS) PTBs** identify the competencies, behaviors, and tasks that personnel should demonstrate to become qualified for a defined incident position. A copy of the NQS PTB for the position in this course is included as a separate PDF file in the course materials. NQS PTBs can also be downloaded from <https://www.fema.gov/national-qualification-system>. NQS is not the only PTB in common use and other PTBs may be used for this activity. The All-Hazards Incident Management Team Association (AHIMTA) has developed All-Hazards IMT PTBs which are available at <https://www.ahimta.org/ptb>. The National Wildfire Coordination Group (NWCG) has developed wildland firefighting PTBs which are available at <https://www.nwcg.gov/publications/position-taskbooks>.

#### Rules, Roles, and Responsibilities

Following are the specific activities / instructions for your participation in the activity:

1. Within your work group, select a group spokesperson.
2. Review the PTB. Looking at the Competencies (do not delve into Behaviors or Tasks), identify functions and duties that you perform during your regular job and that are listed in the PTB.
3. Write the common functions/duties/responsibilities on easel pad paper.
4. Present your list to the rest of the class.

**Instructors** moderate discussions, answer questions and provide additional information as required.

## Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	2 minutes	Classroom
Discussion / Documentation	15 minutes	Small Groups
Debrief / Review	15 minutes	Classroom

## Handout 1-1: ICS Form 214 Content Considerations

**Contact Information** – List for each person you are assigned to Lead

- Cell phone #
- E-mail (optional)

**Emergency Contact Information Key** - List for each person you are assigned to Lead!

- Emergency Contact Person's Name
- Emergency Contact Person's Relationship
- Emergency Contact Person's Telephone #'s (e.g. Cell, Work, Home)

### 3 "A's"

- Actions - (e.g. Responding, Checked In, Attended meeting, performed or completed an operation/assignment, requested resources, provided update, Demobilize, etc.)
- Agreements - (e.g. Commitment of personnel, equipment, supplies, apparatus or funding to support an incident, etc.)
- Accidents - (e.g. Statement regarding personal involvement in or witness of accident and associated happenings, etc.)

### 3 "I's"

- Information (and Intelligence) - (e.g. documentation of data that has not yet been confirmed or validated that requires further research to become useable information. In NIMS, "intelligence" refers exclusively to threat-related information developed by law enforcement, medical surveillance, and other investigative organizations.
- Issues - (e.g. Reoccurring challenges requiring follow up discussion in a variety of potential settings [meetings, briefings, etc.]: C&GS, AA briefings, Team meetings, Section or Unit meetings, "Hot Washes", After-Action Reports, etc.)
- Inspirational Ideas - (e.g. Personal observations and capturing of ideas to improve self or team performance if responding to similar or like incidents in the future.....such as noting a piece of equipment or some supplies another responder or Incident Management Team brings with them as part of their "Go Bag" or IMT Trailer, etc. – write down the Manufacturer, Make, Model of the item, etc.)



### 3 “D’s”

- Disagreements - (e.g. Record information requiring the initiation of assignment “Right of Refusal”)
- Disputes - (e.g. Matters that may require on scene clarification from Leadership at the incident or matters requiring follow up post incident such as challenges with established policy, procedures, etc. that require further research and resolution post-incident)
- Disruptions - (e.g. Mission or work flow interruption – vehicle or equipment break downs, etc.)

## **Handout 1-2: Sample Completed ICS Form 214 Activity Log**

Refer to EL 964\_HO 1-2\_ICS Form 214.pdf

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# Unit 2: Overview of the Planning Section and the Incident Action Planning Process

STUDENT MANUAL

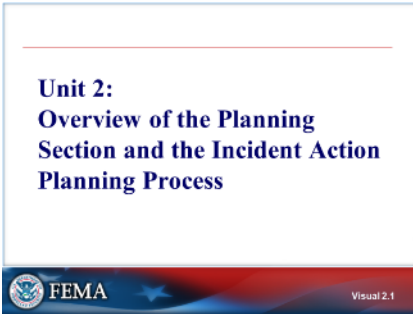
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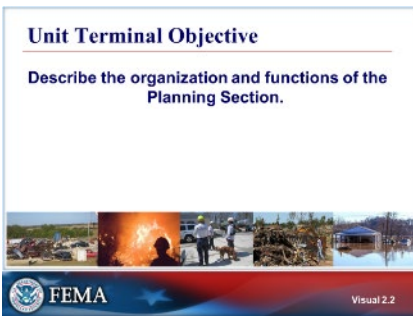




Visual 2.1

## UNIT 2: OVERVIEW OF THE PLANNING SECTION AND THE INCIDENT ACTION PLANNING PROCESS

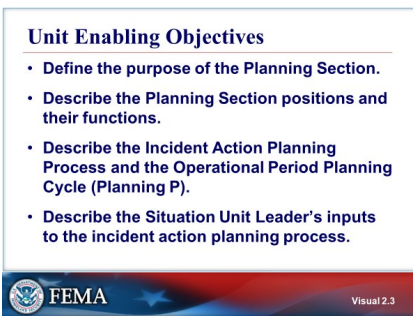
Through discussion of the functions and processes of the Planning Section, students will understand the purpose and organization of the Planning Section and gain insight into the broader context of the Situation Unit Leader's role.



Visual 2.2

### UNIT TERMINAL OBJECTIVE

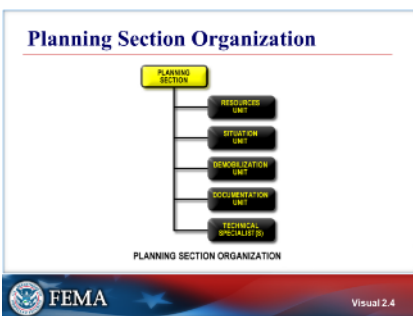
Describe the organization and functions of the Planning Section.



Visual 2.3

### UNIT ENABLING OBJECTIVES

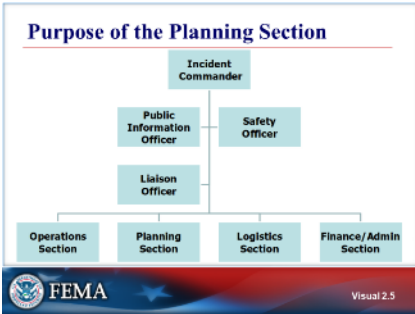
- Define the purpose of the Planning Section.
- Describe the Planning Section positions and their functions.
- Describe the Incident Action Planning Process and the Operational Period Planning Cycle (Planning P).
- Describe the Situation Unit Leader's inputs to the incident action planning process.



Visual 2.4

### PLANNING SECTION ORGANIZATION

Situation Unit is part of the Planning Section.



Visual 2.5

## PURPOSE OF THE PLANNING SECTION

The role of the Planning Section in support of incident management.

The Planning Section is a support function. The better services the Planning Section provides, the more quickly and efficiently the operational response can be finished. The key focus is on developing, maintaining, and delivering usable information.

**Purpose of the Planning Section (Cont.)**

- Supports Incident Commander (IC)
  - Incident objectives
  - Overall incident management planning and information

Visual 2.6

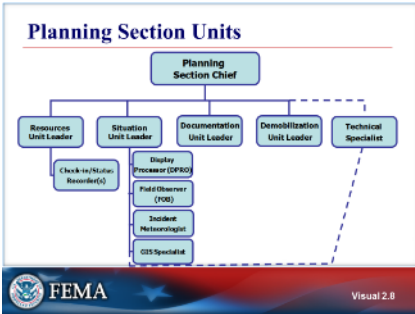
## PURPOSE OF THE PLANNING SECTION (CONT.)

**Purpose of the Planning Section (Cont.)**

- Supports IMT
  - Keeps the team on schedule.
  - Provides maps and displays for meetings.
  - Tracks resources.
- Supports Operations
  - Incident Action Plan.
  - Incident projections.
  - Contingency planning.

Visual 2.7

## PURPOSE OF THE PLANNING SECTION (CONT.)



Visual 2.8

## PLANNING SECTION UNITS

A Technical Specialist is not a Unit in the Planning Section, but may serve under the Planning Section Chief (PSC) or report to a Unit Leader.

The PSC is responsible for managing the Resources, Situation, Documentation, and Demobilization Units, as well as any Technical Specialists assigned to the Planning Section. The functions and responsibilities of each Unit become the responsibilities of the Planning Section Chief if these Units are not established.

**Resources Unit** - The Resources Unit ensures that all assigned personnel and other resources have checked in at the incident.

**Situation Unit** - The Situation Unit collects, processes, and organizes ongoing situation information; prepares situation summaries; and develops projections and forecasts of future events related to the incident.

**Documentation Unit** - The Documentation Unit maintains accurate and complete incident files, including a complete record of the major steps taken to resolve the incident; provides duplication services to incident personnel; and files, maintains, and stores incident files for legal, analytical, and historical purposes.

**Demobilization Unit** - The Demobilization Unit develops a Demobilization Plan that includes specific instructions for all personnel and resources that will require demobilization.

**Navigate the Planning P**

Requires five major steps:

- Tactics Meeting
- Planning Meeting
- IAP preparation
- Operational period Briefing
- ICS Form 209 Incident Status Summary

Handout 2-1: Planning P  
Handout 2-2: Coast Guard Planning P

FEMA Visual 2.9

Visual 2.9

## NAVIGATE THE PLANNING P

The diagram is the Operational Period Planning Cycle from NIMS (referred to as the Planning P). Other organizations may use variations of this planning cycle.

The steps in the planning process (the required steps are in *italics*):

- IC sets objectives
- Initial Strategy Meeting
- *Tactics Meeting*
- *Planning Meeting*
- *Incident Action Plan (IAP) preparation and approval*
- *Operational Period Briefing*
- Execute plan and assess
- Submit *ICS Form 209 Incident Status Summary*

The Planning Section Chief is responsible for ensuring that everyone adheres to the Planning Cycle process and timeframes.

Refer to Handout 2-1: NIMS Planning P and Handout 2-2: Coast Guard Planning P.

**Objectives Review**

1. What is the purpose of the Planning Section?
2. What are the four units within the Planning Section?
3. What are the five major items that must be completed in the Planning Process?
4. What parts of the Planning Process are the Situation Unit Leader's responsibility?

FEMA Visual 2.10

Visual 2.10

## OBJECTIVES REVIEW

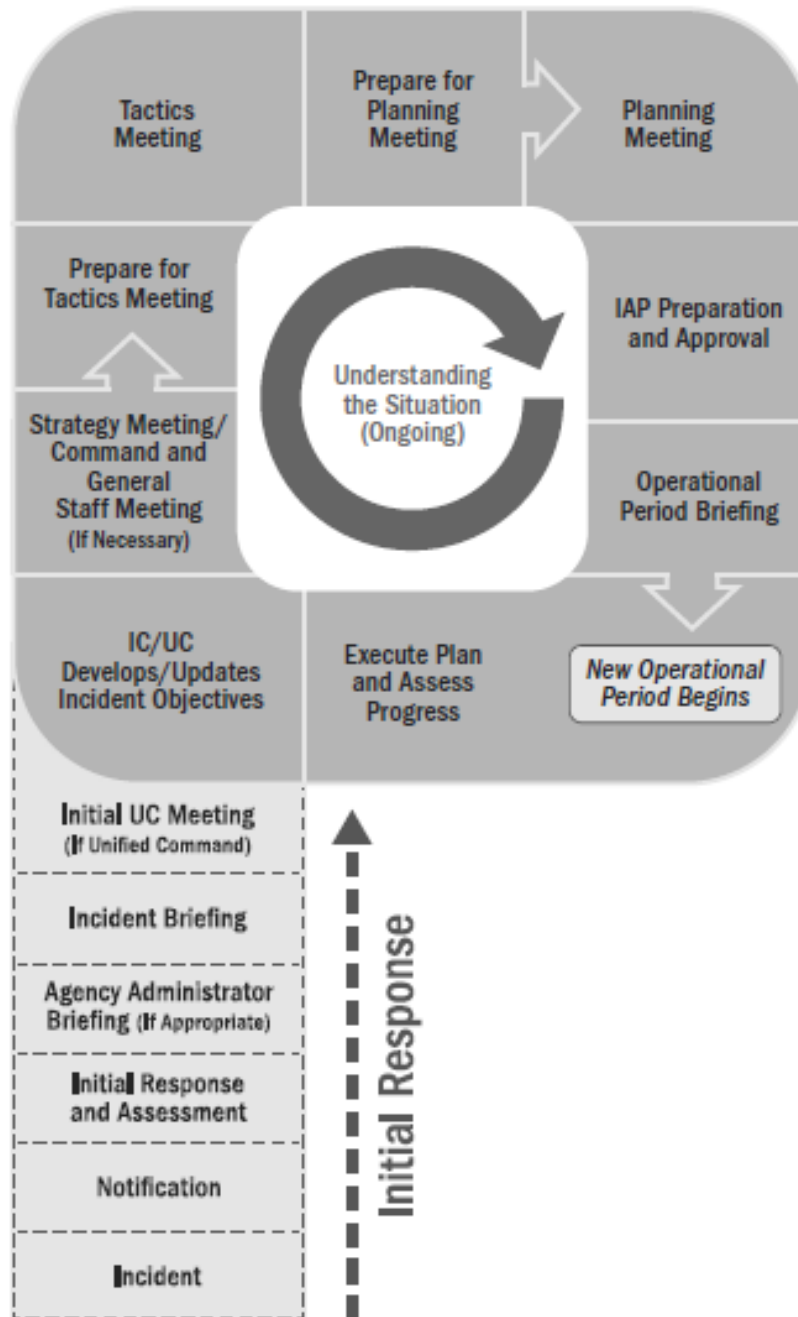
### Unit Enabling Objectives

- Define the purpose of the Planning Section.
- Describe the Planning Section positions and their functions.
- Describe the incident action planning process and the Operational Period Planning Cycle (Planning P).
- Describe the Situation Unit Leader's inputs to the incident action planning process.

## **Supplemental Materials**

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### Handout 2-1: NIMS Planning P



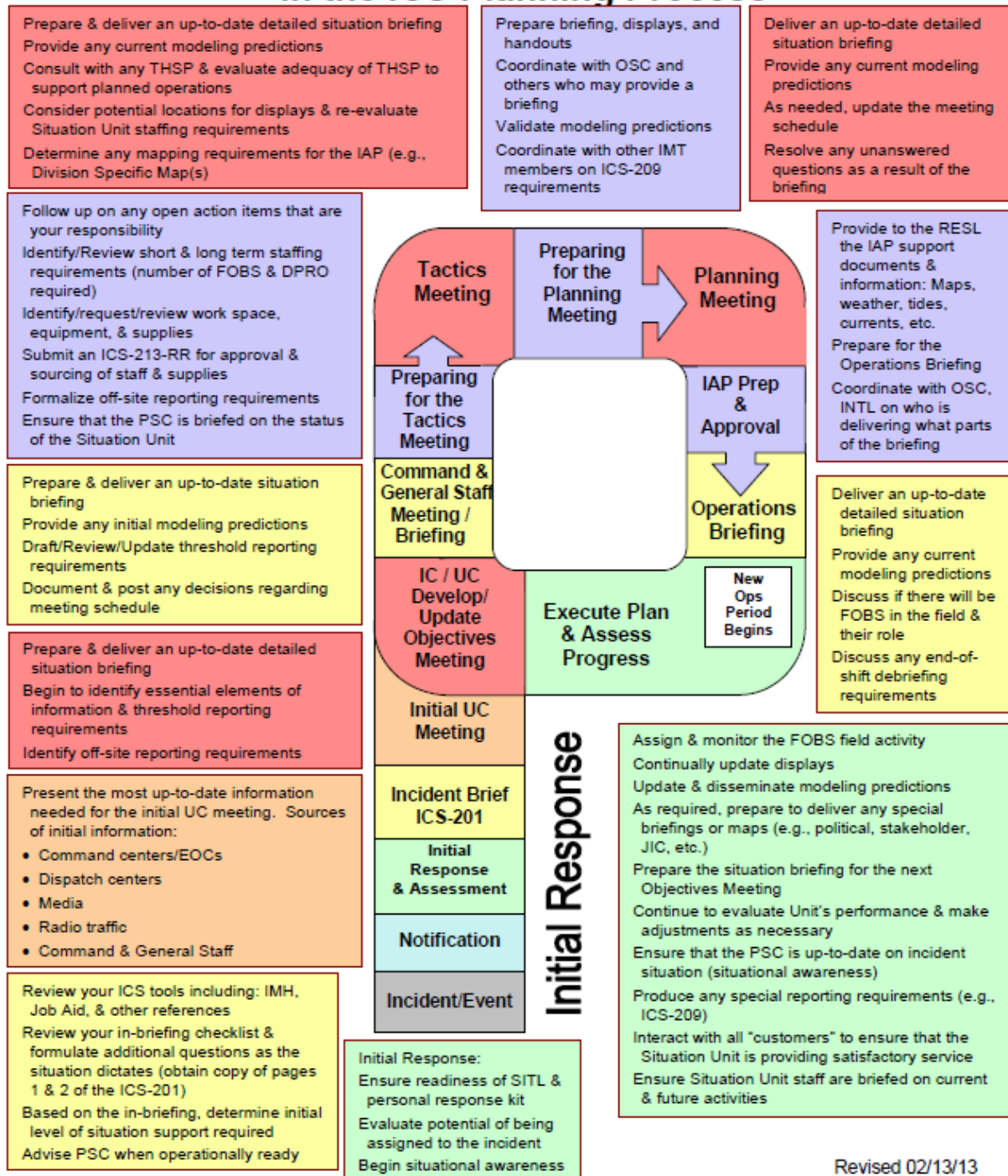
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## Handout 2-2: US Coast Guard Planning P

**UNITED STATES COAST GUARD**

# Situation Unit Leader Activities in the ICS Planning Process



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# Unit 3: Situation Unit Overview

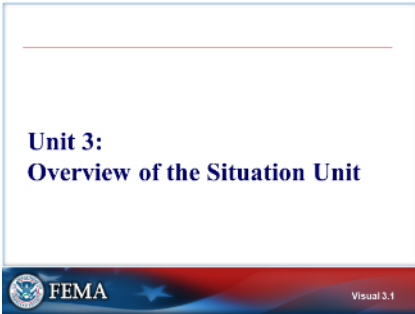
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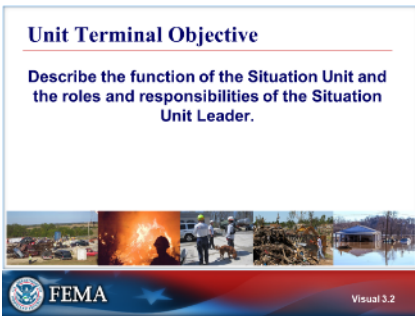
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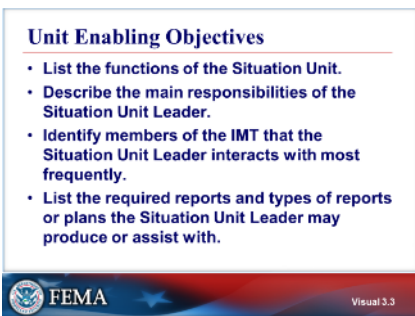
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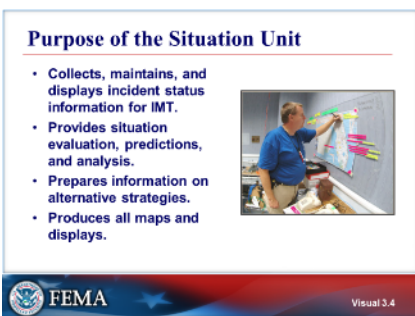
Visual 3.1



Visual 3.2



Visual 3.3



Visual 3.4

## UNIT 3: OVERVIEW OF THE SITUATION UNIT

Through this unit, students will gain a general understanding of the roles and responsibilities of the Situation Unit. Through discussing the gathering, processing, and displaying of information inherent to the Unit, students will gain further insight into the key elements of the Situation Unit within the Incident Command System (ICS).

## UNIT TERMINAL OBJECTIVE

Describe the function of the Situation Unit and the roles and responsibilities of the Situation Unit Leader.

## UNIT ENABLING OBJECTIVES

- List the functions of the Situation Unit.
- Describe the main responsibilities of the Situation Unit Leader.
- Identify members of the IMT that the Situation Unit Leader interacts with most frequently.
- List the required reports and types of reports or plans the Situation Unit Leader may produce or assist with.


## PURPOSE OF THE SITUATION UNIT

The Situation Unit collects, maintains, and displays incident status information for the IMT. The Situation Unit also provides situation evaluation, predictions, and analysis and prepares information on alternative strategies. Additionally, the Situation Unit prepares all map displays.

**Situation Unit Functions**

Responsibilities of Situation Unit:

- Identify informational needs
- Gather data
- Turning data into information
- Prepare and display incident information
- Other functions include...



FEMA Visual 3.5

Visual 3.5

## SITUATION UNIT FUNCTIONS


### Functions of the Situation Unit.

- Identifying informational needs.
- Gathering, analyzing, and evaluating incident data and turning it into useable information (and sometimes intelligence) is the primary focus of the situation unit.
- Preparing and displaying incident information.
- Other functions:
  - Providing mapping, predictive, and risk assessment services.
  - Submitting reports and documentation.
  - Structuring assessments
  - Calculating fire behavior
  - Determining incident weather.

**Situation Unit Functions (Cont.)**

The SITL must have an understanding of:

- What has happened?
- What progress has been made?
- What are perimeters?
- What is incident growth potential?
- What are threats?
- What is the damage?
- What are opportunities?



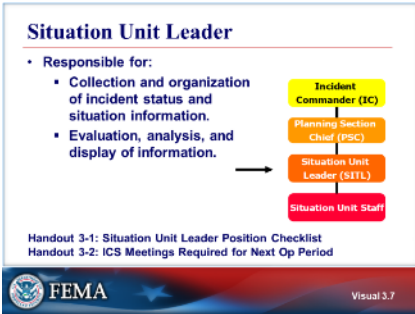
FEMA Visual 3.6

Visual 3.6

## SITUATION UNIT FUNCTIONS (CONT.)

As the Situation Unit Leader, you will first need to find out what has already happened and what progress has been made. Frequently, an IMT will take over from an initial response team. It is the job of the Situation Unit Leader to figure out what has worked, what has not, and where the incident is moving.

The advantage of being the Situation Unit Leader is that you can step back, analyze the data, and put all of the essential information together to present to the IMT.



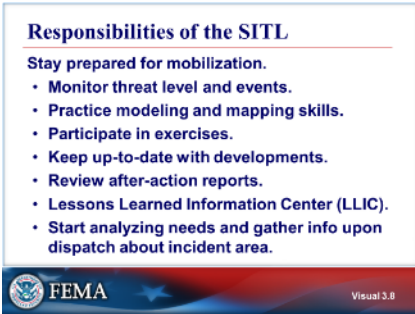
Visual 3.7

## SITUATION UNIT LEADER

Responsibilities of the Situation Unit Leader:

- Collecting, processing, and organizing all of the incident information.
- Prepare future projections of incident growth, maps, and intelligence information.

Refer to Handout 3-1: Situation Unit Leader Position Checklist and Handout 3-2: ICS Meetings Required for Next Operational Period.



Visual 3.8

## RESPONSIBILITIES OF THE SITL

The visual outlines suggestions to stay prepared for mobilization.

One technique for preparing for incidents is to stay aware of incidents throughout the country, and ask yourself, “What would I do if I were the Situation Unit Leader for that incident?”

- A key to early success at an incident is staying prepared for dispatch.
- Spend time going through Websites getting informed.
- Be prepared to do it all at a dead run for the first 48 hours.
- Start analyzing incident needs and gather information upon dispatch; sources include:
  - Media
  - Local contacts
  - Home region of incident
- Monitor developing incidents; sources include:
  - National Response Center
  - Department of Homeland Security
  - Weather
  - Terrorism Threat
  - Web Emergency Operations Center
- Practice modeling and mapping skills.
- Encourage and participate in exercises.
- Conduct in-house ICS review and training.
- Keep up-to-date with developments and technology that will affect the Situation Unit.
- Review after-action reports.
- Dispatch center contact information.
- Obtain GACC contact information.



- Pre-identify any FOBS, DPRO, other SITL that are available to assist you if necessary.


If you arrive at an incident ahead of the team, there are some basic things you should NOT do:

- Do not go into an operational area without the permission of the Operations Section Chief (OSC).
- Never go into a division without getting permission from the Division Supervisor.

**Responsibilities of the SITL (Cont.)**

Obtain briefing from Planning Section Chief.

- Identify reporting requirements and schedules.
- Discuss timelines and priorities.
- Obtain copies of ICS Forms 201, 209 and the IAP.




FEMA Visual 3.9

Visual 3.9

**Responsibilities of the SITL (Cont.)**

Organize, staff, and supervise unit.

- Brief subordinate staff on current incident status.
- Assign tasks.
- Notify staff of timelines, priorities, and format requirements.
- Monitor unit progress.
- Assume responsibilities for positions that are not fully staffed within Situation Unit.



FEMA Visual 3.10

Visual 3.10

### RESPONSIBILITIES OF THE SITL (CONT.)

The Situation Unit Leader should obtain an initial briefing from the Planning Section Chief (PSC) and begin gathering information.

If you are part of a standing IMT, you may have standard schedules that you follow. If not, then you are a single resource or on a new team, it is important that you ask for this information up front.

### RESPONSIBILITIES OF THE SITL (CONT.)


The Situation Unit Leader is responsible for all functions performed by the Situation Unit. In some cases, the Situation Unit Leader will have staff to perform these functions, but in other cases, the Situation Unit Leader may need to perform these functions without support staff.

A responsibility of the Situation Unit Leader is to organize, staff, and supervise the unit.

- Assemble staff and manage a Unit that provides information, based on:
  - Information that is verified, timely, and up to date.
  - Accurate and usable displays of this information.

**Responsibilities of the SITL (Cont.)**  
 Compile, analyze, and maintain incident status information.

- Identify information gaps
- Gather data
- Review all information for completeness, accuracy, and relevancy
- Process data into information
- Ensure essential information is up-to-date




Visual 3.11

**Responsibilities of the SITL (Cont.)**  
 Prepare, post, and disseminate resource and situation information.

- Determine appropriate displays.
- Develop additional displays as necessary.
- Ensure displays are kept up-to-date.
  - Control the disposal of outdated displays/maps.
- Review for accuracy.

Photographic services or maps that might be requested include...



Visual 3.12

## RESPONSIBILITIES OF THE SITL (CONT.)

The Situation Unit Leader will be responsible for managing incident status information.

Another responsibility of the Situation Unit Leader is to compile, analyze, and maintain incident status information.

An important aspect of the Situation Unit Leader's job is to determine what information is missing and how to obtain it.

## RESPONSIBILITIES OF THE SITL (CONT.)

The IMT may need a variety of information to plan the incident response. It is the Situation Unit Leader's responsibility to prepare, post, and disseminate resource and situation information.

The IMT will use every piece of information the Situation Unit produces. The Situation Unit Leader must be responsible for prioritizing requests. It is the Situation Unit Leader's job to identify the fastest way to display information to accomplish the mission.

Make sure information is taken down once it has become inaccurate or out of date. Don't put up more displays than you can maintain.


Control the disposal of outdated displays and maps.

**Responsibilities of the SITL (Cont.)**

Prepare the ICS Form 209 Incident Status Summary.

- Provides incident information to agency dispatch and off-incident coordination centers and MAC Groups.
- Provides basic information to the Public Information Officer (PIO) for preparation of media release.

Handout 3-3: Blank ICS Form 209  
Handout 3-4: Sample ICS Form 209




Visual 3.13

Visual 3.13

**Responsibilities of the SITL (Cont.)**

Prepare periodic predictions.

- Analyze existing information and provide predictions of future status for use in planning.
- Assemble information on alternative strategies.
- Document alternatives.
- Provide weather forecasts.



Visual 3.14

Visual 3.14

## RESPONSIBILITIES OF THE SITL (CONT.)

The ICS Form 209 Incident Status Summary is prepared by the Situation Unit. Resource information is obtained from the Resources Unit. The form is duplicated and copies are distributed to the Incident Commander and staff, all Section Chiefs, Planning Section Unit Leaders, and Agency Dispatch Centers. It is posted on the display board located at the Incident Command Post (ICP).

The ICS Form 209 serves the following purposes:

- Provides incident information to agency dispatch and off-incident coordination centers.
- Provides basic information to the Public Information Officer (PIO) for preparation of media release.
- Used by the Situation Unit personnel for posting information on ICP displays.

Refer to Handout 3-3: Blank ICS Form 209 and Handout 3-4: Sample ICS Form 209.


## RESPONSIBILITIES OF THE SITL (CONT.)

The Situation Unit Leader provides situation evaluation, prediction, and analysis for Command and Operations and prepares information on alternative strategies.

- Provide current spot weather forecast for each Tactics Meeting, Planning Meeting, and IAP.
- Analyze existing information and provide predictions of future status for use in planning.
- Assemble information on alternative strategies.
- Identify resources required to implement a contingency plan.
- Document alternatives for presentation to Incident Commander and Operations.
- Provide weather forecasts.

**Responsibilities of the SITL (Cont.)**

- Maintain ICS Form 214 Activity Log.
  - Record details of unit activity.
  - Use as a reference for after-action reports.
- Submit completed Activity Logs to Planning Section Chief, who will provide a copy to the Documentation Unit.





Visual 3.15

**Incident Commander**

Maintains:

- Maps in Incident Commander work area.
- ICS Form 209 review time and signature.





Visual 3.16

**Operations Section Chief**

Provides:

- Incident status.
- Weather forecasts.
- Operational incident maps.
- Projections, risks, threats & hazards.
- Sensitive areas, risks & losses.



Visual 3.17

## RESPONSIBILITIES OF THE SITL (CONT.)

Maintaining the Activity Log is an important responsibility of the SITL. The ICS Form 214 records details of Unit activity. The file of these logs provides a basic reference from which you can extract information for inclusion in any after-action reports.

## INCIDENT COMMANDER

The Situation Unit Leader must:

- Keep the Incident Commander updated on incident status, damages, and threats.
- Maintain maps in the Incident Commander's work area.
- Get Incident Commander approval of ICS Form 209.
- Obtain Incident Commander approval before releasing documents.

## OPERATIONS SECTION CHIEF


The Situation Unit Leader must:

- Provide information on incident status, projections, risks, threats, hazards, and damage, as well as evacuation and mitigation techniques to the Operations Section Chief.
- Provide mapping and imaging services to the Operations Section Chief.
- Provide updated spot weather forecasts to the Operations Section Chief.
- Obtain incident progress, planned actions, and priority information for the ICS Form 209.

**Air Operations Branch Director**

Coordinates:

- Locate air facilities for placement on IAP map.
- Flight scheduling for recon or FLIR.
- Air hazard maps.
- Georeferenced Air Ops Map




FEMA Visual 3.18

Visual 3.18

**Public Information Officer**

- Provides information and maps for press releases.
- Provides ICS Form 209.
- Clarifies responsibilities for information board maintenance.




FEMA Visual 3.19

Visual 3.19

**Safety Officer**

- Provides information on Incident Status.
- Provides updates on threats and risks.
- Obtains injury info for ICS Form 209.



FEMA Visual 3.20

Visual 3.20

## AIR OPERATIONS BRANCH DIRECTOR

The Situation Unit Leader may:

- Locate air facilities for placement on IAP map – georeferenced if possible.
- Coordinate flight scheduling for reconnaissance or Forward-Looking Infrared with the Air Operations Branch Director.

## PUBLIC INFORMATION OFFICER

The Situation Unit Leader must:

- Keep the PIO updated on incident status, damages, and threats.
- Prepare maps and visual support for public release as requested by the PIO.
- Provide the PIO with an ICS Form 209 Incident Status Summary as soon as it is approved.

## SAFETY OFFICER


The Situation Unit Leader must:

- Keep the Safety Officer updated on incident status, threats, and risks.
- Obtain an ICS Form 209 Incident Status Summary for injury information.

The Safety Officer provides information on the number of injuries or fatalities that have occurred on the incident.

**Ground Support Unit**


- Obtains information about drop points, road capabilities, and travel routes.
- Update information on Transportation Map (e.g., drop points, traffic plan).



Visual 3.21

**Facilities Unit**



- Obtains information on location of incident facilities.
- Assists with preparation of Facilities Map.



Visual 3.22

**Resources Unit**

- Obtains resource info for ICS Form 209.
- May assist in locating and verifying assigned resources.

Visual 3.23

## GROUND SUPPORT UNIT

The Situation Unit Leader must:

- Assist with the Incident Traffic Plan by providing information on road conditions, routes and possible drop points, fuel locations, and staging areas.
- Prepare a Incident Traffic Plan map with approval of the Ground Support Unit.

Ground Support Unit decides where to place the drop points. The Situation Unit Leader's role is to identify the drop points on the Transportation map. Field Observers (FOBS) are a resource to validate information received from Ground Support.

## FACILITIES UNIT

The Situation Unit Leader must assist the Facilities Unit Leader (FACL) in locating sites for incident facilities and preparing the Facilities map. Although the FACL is officially responsible for the Facilities map, the Situation Unit Leader often assists.

The Facilities map is produced from the Facility Unit Plan. The Facilities Unit determines where the facilities are located. It is the Situation Unit Leader's responsibility to draw those points on the map.


The Facilities Unit may use the ICS Form 209 information for meal counts on the incident.

## RESOURCES UNIT

The Situation Unit Leader must obtain resource information from the Resources Unit Leader (RESL) for ICS Form 209. The RESL provides the information in the required format on Block numbers 48 through 53.

### Resource Advisors & Agency Representatives

- Obtains information.
  - Sensitive resources and issues.
  - Values at risk.
  - Potential map sources.
  - Local personnel.
- Maintains open communication.
- SITL provides access to mapping products & ICS Form 209.



FEMA Visual 3.24

Visual 3.24

## RESOURCE ADVISORS & AGENCY REPRESENTATIVES

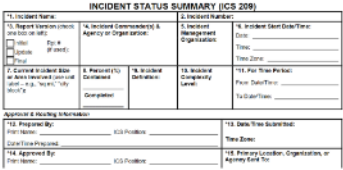
The Situation Unit Leader obtains information on sensitive resources, values at risk, and map sources, and keeps the Resource Advisors (READs) and Agency Representatives (AREPs) informed. They maintain open communication at all times.

Resource Advisors and Agency Representatives can provide information about environmental, historical, or cultural concerns. They will also want to have copies of incident maps and ICS Form 209s.

Situation Unit Leader provides READs and AREPs with resource damage maps and may assign FOBS to assist READs in collecting data in the field.

### Cost Unit

- Obtains cost information for ICS Form 209.



FEMA Visual 3.25

Visual 3.25

## COST UNIT

The Situation Unit Leader must obtain cost information for ICS Form 209 Incident Status Summary from the Cost Unit Leader (COST).

### Compensation & Claims Unit

- Obtains and provide information on damages and losses.
- Assists with documentation and imaging of possible claims and losses.

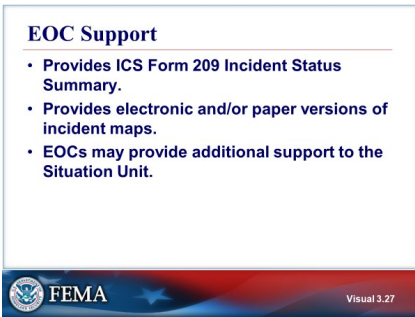
FEMA Visual 3.26

Visual 3.26

## COMPENSATION & CLAIMS UNIT

The Situation Unit Leader may assist Compensation & Claims Unit Leader (COMP) with:

- Preparing damage reports, maps, and photos.
- Obtaining claim and injury information from the COMP.

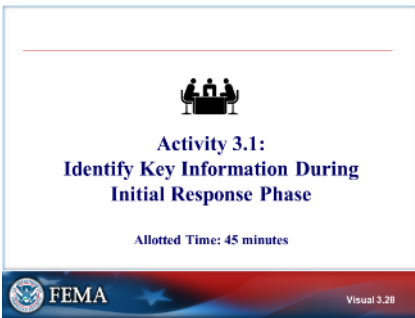


Visual 3.27

## EOC SUPPORT

The Situation Unit Leader supports the Emergency Operation Center (EOC) by:

- Provide information to many persons and agencies not on the IMT.
- Be prepared for surprise briefing requests from the EOC, Agency Ordering Point (AOP), or other coordinating offices:
  - ICS Form 209 Incident Status Summary
  - Map of incident
- You may need to use FTP/File Sharing sites to move large files.

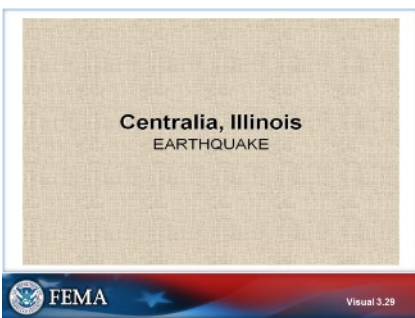


Visual 3.28

## ACTIVITY 3.1: IDENTIFY KEY INFORMATION DURING INITIAL RESPONSE PHASE

The instructor will introduce Activity 3.1.

You will have 45 minutes to complete the activity.



Visual 3.29

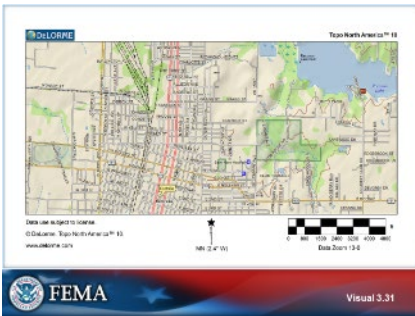
## ACTIVITY 3.1: CENTRALIA, ILLINOIS EARTHQUAKE





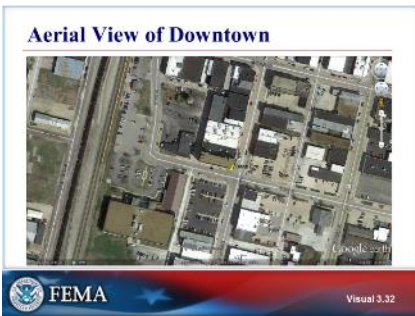
Visual 3.30

**ACTIVITY 3.1**



Visual 3.313

**ACTIVITY 3.1 MAP MADE WITH DELORME**



Visual 3.32

**AERIAL VIEW OF DOWNTOWN**



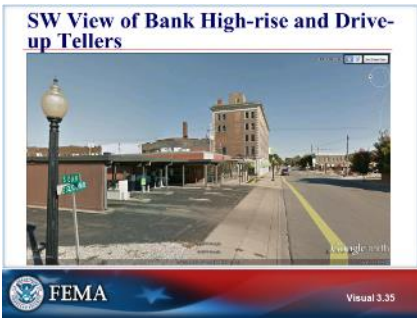
Visual 3.33

**SOUTHEAST CORNER OF BANK BUILDING**



Visual 3.34

**THEATER WITH BANK TO LEFT**



Visual 3.35

**SW VIEW OF BANK HIGH-RISE AND DRIVE-UP TELLERS**



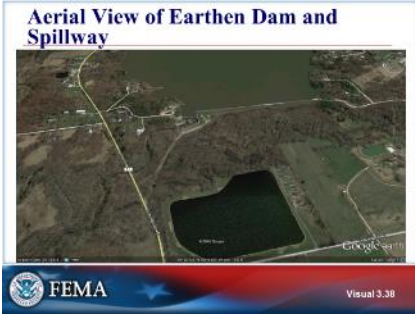
Visual 3.36

**WEST SIDE OF THEATER AND BANK**



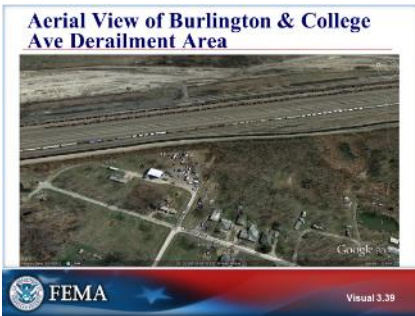
Visual 3.37

**RACCOON RESERVOIR LOOKING WEST TOWARDS TOWN**



Visual 3.38

## AERIAL VIEW OF EARTHEN DAM AND SPILLWAY



Visual 3.39

## AERIAL VIEW OF BURLINGTON & COLLEGE AVE DERAILMENT AREA



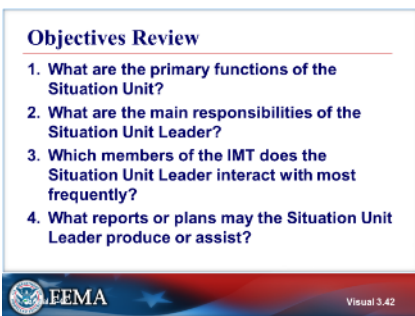
Visual 3.40

## DAMAGED HOUSES



Visual 3.41

## CENTRALIA RECREATION CENTER - ICP



Visual 3.42

## OBJECTIVES REVIEW

### Unit Enabling Objectives

- List the functions of the Situation Unit.
- Describe the main responsibilities of the Situation Unit Leader.
- Identify members of the IMT that the Situation Unit Leader interacts with most frequently.
- List the required reports and types of reports or plans the Situation Unit Leader may produce or assist with.

# **Supplemental Materials**

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## Handout 3-1: Situation Unit Leader Checklist

The following checklist should be considered as the minimum requirements for this position. Note that some of the tasks are one-time actions; others are ongoing or repetitive for the duration of the incident.

### TASK

1. Obtain briefing from Planning Section Chief:
  - Review ICS Form 201 for incident status.
  - Determine incident objectives and strategy.
  - Determine necessary contingency plans.
  - Identify reporting requirements and schedules—both internal and external to the incident.
2. Organize and staff Unit, as appropriate:
  - Assign Field Observers.
  - Request Technical Specialists, as needed.
3. Supervise Technical Specialists as assigned (on very complex incidents, it may be necessary to assign a supervisor to oversee Technical Specialists):
  - Brief Technical Specialists on current incident status.
  - Assign analysis tasks.
  - Notify staff of time lines and format requirements.
  - Monitor progress.
4. Compile, maintain, and display incident status information for Incident Command Post staff:
  - Sort data into required categories of information (i.e. geographic area, population, facilities, environmental values at risk, location of facilities, etc.).
  - Determine appropriate map displays.
  - Review all data for completeness, accuracy, and relevancy before posting.
  - Plot incident boundaries, location of perimeters, facilities, access routes, etc. on display maps in planning area.
  - Develop additional displays (weather reports, incident status summaries, etc.), as necessary.
  - Ensure displays and maps are kept up to date.

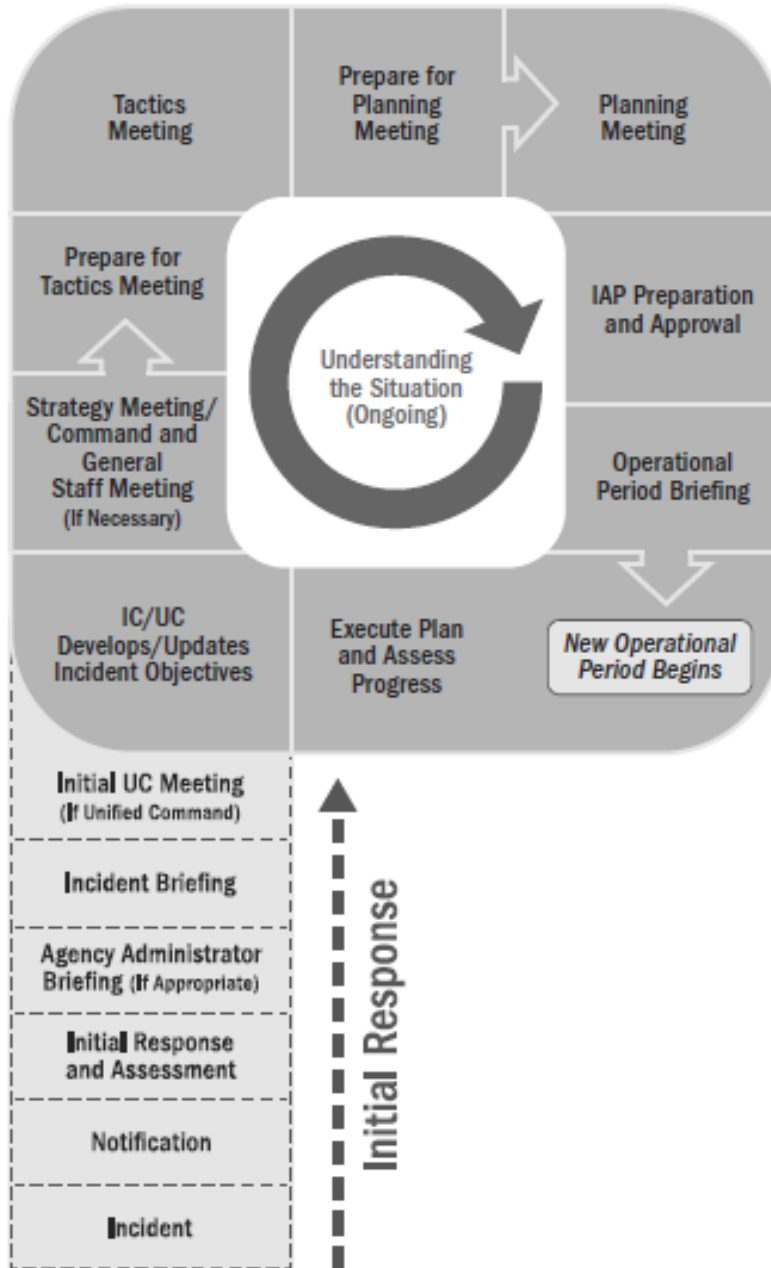
5. Provide photographic services and maps:
  - Photographic services may be used to document operations, public information activities, and intelligence-related investigations.
  - Issue disposable or digital cameras to Field Observers and Operations personnel as appropriate.
  - Ensure photographs are processed at the end of each operational period.
  - Request or develop additional and specialized maps as required.
  - Provide Incident map(s) for Incident Action Plan (IAP).
6. Provide situation evaluation, prediction, and analysis for Command and Operations; prepare information on alternative strategies:
  - Review current and projected incident and resource status.
  - Develop alternative strategies.
  - Identify resources required to implement contingency plan.
  - Document alternatives for presentation to Incident Commander and Operations and inclusion in the written IAP, using the ICS Form 204 Contingency Plan.
7. Interview Operations personnel coming off duty to determine effectiveness of strategy and tactics, work accomplished, and work left to be accomplished.
8. Request weather forecasts and spot weather forecasts, as necessary, directly from the National Weather Service.
9. Prepare ICS Form 209 Incident Status Summary and other status reports, as assigned before each Planning Meeting:
  - Provide copies to Command and General Staff.
  - Forward to agency administrator and to other entities, as directed.
10. Participate in Planning Meetings, as required.
11. Prepare predictions at periodic intervals, or upon request of the Planning Section Chief. Notify Command and General Staff if unforeseen changes occur.
12. Provide Briefing to relief on current and unusual situations.
13. Document all activity on ICS Form 214 Activity Log.



## Handout 3-2: ICS Meetings Required for Next Operational Period

Meeting Order and Name	Who Attends	Intended Audience	Meeting Objectives	Comments	SITL Products needed for meeting
1. Strategy if needed	IC, Command and General Staff (C&GS), Agency Administrators (Optional)	C&GS	From Agency Administrator Direction, validate incident or adjust objectives	Convene daily to validate existing objectives. Objectives documented on ICS Form 202	
2. Tactics	OSC, PSC, SOF, LSC, RESL	OSC, PSC, SOF, LSC	Develop draft ICS Form 215 for next operational period	Conducted in private to develop achievable tactical plan. Be sure it achieves ICS Form 202 objectives	Incident map, working copy
3. Planning	C&GS, Selected Unit Leaders, Agency Reps.	C&GS VIPS, Agency Admin.	Present the Draft ICS Form 215 to the whole IMT, adjust plan as necessary	This is the most "choreographed" meeting. IC approves tactical plan at this stage	Incident map working copy, maybe same one from Tactics Meeting
IAP Preparation and duplication				Typically, RESL & DOCL do most of the work. Other Section personnel as needed	IAP Map, Traffic Plan & Facilities Maps
Operations Briefing	C&GS	Operational Resource Leader (DIVS, TFL, STL, Group Sup. Etc.)	Brief the working troops regarding that operational period tactics and work assignments	Hand out copies of Incident Actions Plan to supervisors. "Speak" to the troops, not the C&GS	Incident Map Large Scale
Command & General Staff	C&GS only	C&GS only	Monitoring of Team Performance and adjustments as necessary	Can be held any time, usually informal over lunch or similar. Monitors "pulse" of the C&GS	

## Operational Period Planning Cycle - Planning P



### **Handout 3-3: Blank ICS Form 209**

Refer to EL\_964\_HO\_3-3\_ICS\_Form\_209.pdf

### **Handout 3-4: Sample ICS Form 209**

Refer to EL\_964\_HO\_3-4\_ICS\_Form\_209.pdf

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## Activity 3.1: Identify Key Information During Initial Response Phase

### Planning Section Chief Briefing Activity 3.1—Unit 3

#### Purpose

The purpose of this activity is to allow students to identify key information needed during the initial response phase to perform their roles as Situation Unit Leaders (SITLs).

#### Objectives

Students will:

- Identify the key information obtained during dispatch, response, and check-in and during the Planning Section Chief (PSC) Briefing that impacts a SITL.
- Identify key information not presented, but needed, in a PSC Briefing.

#### Activity Structure

This activity is scheduled to last approximately 45 minutes, including small group discussions and presentations of group findings. Instructors will role play dispatch and the PSC Briefing. The instructors will hand out additional information the SITL obtained during response. In small groups, students will discuss the Briefing to answer the questions (under “Questions” on the following page). Each group will present its findings to the rest of the class.

#### Rules, Roles, and Responsibilities

Students will be divided into groups of 4–5. Following are the specific activities and instructions for your participation in the activity:

1. Within your work group, select a group spokesperson.
2. Watch and listen to the Briefing.
3. Discuss and answer the questions below.
4. Write your answers to the questions on easel pad paper.
5. Present your list to the rest of the class.

## Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	5 minutes	Classroom
Instructor Role Play	10 minutes	Classroom
Answer Questions	20 minutes	Small Groups
Debrief/Review	10 minutes	Classroom



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### Activity 3.1: Scenario Background

The Wabash Valley and New Madrid seismic zones are in the Mississippi, Ohio, and Wabash River drainages of the Central United States. The largest series of earthquakes to strike the continental US occurred in this area during the winter of 1811-1812. The area had over 100 earthquakes with a magnitude of 2.5 or greater in the period from 1972-2002. The USGS has rated the area as a high-hazard region for earthquakes. The Wabash Valley seismic zone is located SW of Indianapolis in southern Illinois and Indiana.

Centralia, IL (latitude W 89 degrees 8.082', longitude N 38 degrees 31.590' 16S CH 1396 6651) is a city with a population of ~13,000 (2013 Census). Centralia is in Marion County and is located near one of the larger earthquakes to have occurred in the Wabash Valley zone in the 1972 to 2002 study. Centralia is located approximately 57 miles East of Saint Louis, MO.

- Centralia has Administration, Fire, Police, Public Works, and Recreation Departments.
- Centralia has a paid fire department with 2 fire stations with 2 trucks, 3 engines, 1 snorkel; 1 rescue, and 2 HAZMAT response vehicles.
- Centralia has 25 police officers.
- Centralia is in Division 47 of the Illinois Mutual Aid Box Alarm System (MABAS) emergency coordination system.

#### The Scenario:

A 5.7 earthquake occurred at 1432 on April 21. Incidents in progress:

1. Three masonry buildings on 100 block of S. Locust Street near and including the Illinois Theater have suffered partial collapse, and a fire is burning in the bank. The buildings include a 4-story bank and a 2-story store. All buildings have rescue concerns.
2. A train derailment has occurred east of Burlington St. A tank car carrying 18,000 gallons of fuming nitric acid has overturned and is leaking from a 3 inch by 1 inch tear.
3. A crack has been reported in the Raccoon Lake Reservoir.
4. There are reports of buildings and residences that have shifted off their foundations.
5. The gas company has been responding to reports of gas leaks.
6. Electrical power is out in much of the community with reports of downed power lines.
7. Water has appeared in the 400 block of E. Kerr St. and there is a concern for water main leak.
8. Numerous small incidents have been cleared by the local Police and Fire departments. Major resource commitment to the Theater Incident.

The City of Centralia has notified MABAS and requested an IMT and mutual aid resources. The MABAS coordination center has called you to serve as SITL on the IMT. You are to report to the ICP at 1600 for a transition meeting.

The ICP is at the Community Recreation Center.

The incident is under Unified Command with Police Chief and the Fire Chief as the two members of the Unified Command.

The City Manager and the MABAS Area Coordinator are conducting an IMT transition briefing at 1600.

## Activity 3.1: Dispatch/Response

### Response Phase

You received a phone call from the MABAS Coordination Center at 1502 hours that the earthquake in Central Illinois has created several incidents in Centralia that look to be extended operations. Centralia has decided to group the incidents and manage them as a complex, and has ordered positions to fill out an IMT to manage the complex.

- The incident name will be the Centralia Complex.
- The incident number is IL-CNT-08-1234
- Your request number is 0-12.
- The reporting location is the Community Recreation Center at S. Oak and E Broadway.
- Reporting time is 1600.

You check the news briefly before you depart and see a few pictures from incidents at Centralia. News reports suggest all the towns within 20 miles of Centralia have a variety of incidents and power outages. The governor is activating the National Guard and plans to visit the area.

You respond to the incident from the North, and you fill up with fuel at Sandoval. The attendant advises he heard electricity was down south of Junction City, and that no stations were operating for quite a way south to about Richview.

You can see smoke rising from downtown.

As you make your way downtown, you notice a few houses that appear damaged on the 100 block of Oak. The construction downtown seems to be fairly old.

You check in at the Recreation Center at 1603. The Agency Administrator Briefing is currently underway. The Recreation Center is running on generator power and the hard-line phones are down.

You try your cell, and it works when you do not get a system busy signal.

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### **Activity 3.1: Planning Section Chief Briefing**

At 1615, your PSC J. Jones returns from the Transition Briefing and meets with the Planning Section. He advises the team that the City Manager and the Area Coordinator conducted the briefing, and have assigned the IMT to manage all incidents within a 4-mile radius of HWY 161 and HWY 51. There will be an introductory team meeting in 5 minutes. The IMT will require an updated press release every hour and an ICS Form 209 at 0600 and 1800 hrs. The Planning Meeting will be at 1700 with an Operational Briefing at 1830. The Planning Section has conference room 2.

#### **Team Meeting**

Team Introductions:

Incident Commander H. Robinson Safety Officer S. Chen  
Liaison Officer H. Foley  
Public Information Officer C. Kent Operations Section Chief B. Williams Planning  
Section Chief J. Jones Logistics Section Chief D. Lopez  
Finance/Administration Section Chief H. Cash Resources Unit Leader G. Gleason  
Communications Unit Leader C. O'Riley Ground Support Unit Leader D. Hill  
Facilities Unit Leader D. Smith Food Unit Leader G. Grub Supply Unit Leader B. Sudan

IC advises tentative objectives are

1. Perform Search and Rescue of citizens and to protect life.
2. Contain the fire on S. Locust Street.
3. Identify and develop an IAP for all hazards and incidents within our delegated area by April 21 @ 1800 hours.
4. Provide a damage assessment report by April 22 @1800.
5. Provide updated press releases hourly.
6. Manage an evacuation center for any displaced residents.

At the meeting, the OSC advised he is leaving to survey the Theater Incident and the Burlington Incident and will return to the ICP at 1645. The OSC stated he is concerned over reports of low hydrant pressure at the Theater Incident. The OSC asked if you have any information on the status of the water system.

OSC requested a Situation Map and updated information.

Evacuation Center is at Youth Center at 1224 E. Rexford St. (E. Rexford and Pleasant).  
Staging Area is at Central City Lions Park at East Marcel Drive & Morrison St.

**NOTE: DO NOT CALL CENTRALIA PUBLIC WORKS ASKING ABOUT THE LEAK POTENTIAL AT THE RACON RESERVOIR! (STUDENTS IN PREVIOUS CLASSES HAVE CALLED TO ASK THE QUESTION)**

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# Unit 4: Information

STUDENT MANUAL

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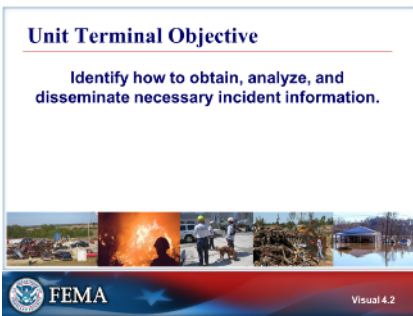
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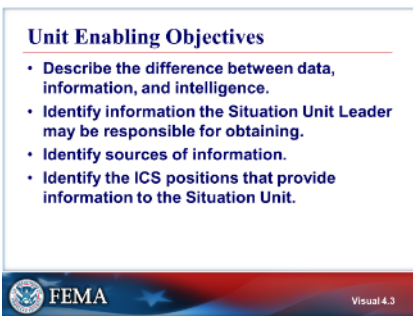




Visual 4.1



Visual 4.2



Visual 4.3

## UNIT 4: INFORMATION

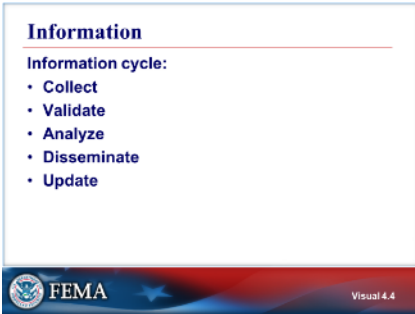
Through this unit, students will gain an understanding of the Situation Unit's responsibility to collect, analyze, process, evaluate, and disseminate information. Students will also discuss what type of information is most critical to obtain, as well as identify who will both supply and demand the most information.

### UNIT TERMINAL OBJECTIVE

Identify how to obtain, analyze, and disseminate necessary incident information.

### UNIT ENABLING OBJECTIVES

- Describe the difference between data, information, and intelligence.
- Identify information the Situation Unit Leader may be responsible for obtaining.
- Identify sources of information.
- Identify the ICS positions that provide information to the Situation Unit.

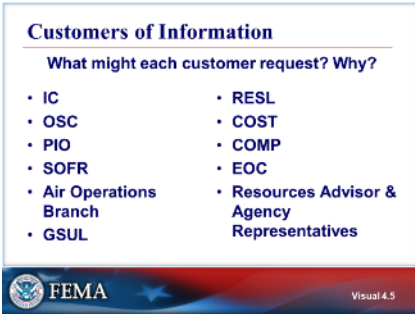


Visual 4.4

## INFORMATION

The Situation Unit collects the data and then validates, analyzes, disseminates, and then updates the essential elements of information.

- **Collect:** The IC/UC may establish a data collection plan to standardize the recurring process of collecting incident information. Where? What? Time/date stamp. (GPS, cables, digital photos, card readers, scanners, etc.)
- **Validate.** Situational Awareness staff review data to determine if it is incomplete, inaccurate, embellished, outdated or misleading.
- **Analyze:** Situational Awareness staff analyze validated data to determine its implications for incident command. Requires focus, no distractions.
- **Disseminate:** Timely and accurate distribution of incident information. How? Who gets it? Control copies? FOUO?
- **Update:** Shared Situational Picture through shared information in print, and displays. Complete and accurate information supports sound decisions.

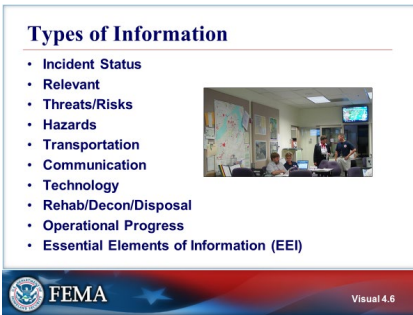


Visual 4.5

## CUSTOMERS OF INFORMATION

The following are examples of who requests information and the types of information requested:

- The Incident Commander (IC) will request maps.
- The Operations Section Chief (OSC) requires everything that is developed, including maps, Essential Elements of Information (EEI), and projections.
- The Public Information Officer (PIO) needs factual information relevant to the public or information public should know.
- The Safety Officer (SOFR) will require information on injuries and hazards.
- Air Operations needs to know temporary flight restrictions and air hazard maps.
- The Ground Support Unit Leader (GSUL) will need a traffic map and information on roads and possible drop points.
- The Resources Unit Leader (RESL) will request the location of resources and initial response resources that did not go through the check-in process.
- The Cost Unit Leader (COST) may request graphs and projections.
- The Compensation and Claims Unit Leader (COMP) will want pictures of any damage.
- Resources Advisors and Agency Representatives will ask for jurisdictional maps, estimates of the amount of damage on their jurisdiction, contingency plans, and projections.
- The Emergency Operations Center (EOC) or Agency Ordering Point (AOP) will need copies of the IAP, ICS Form 209, and maps.



Visual 4.6

## TYPES OF INFORMATION

There are a number of critical questions that the Situation Unit Leader should be asking.


- Incident Status—What is the current status of this incident?
- Operational Progress—How much control or mitigation activity has taken place and what activities remain?
- Relevant Information—What kind of information are people going to need to do their jobs most efficiently and effectively?
- Threats and Risks—How can potential threats and risks be identified?
- Hazards to Personnel—What information are Operations and the Safety Officer going to need?
- Transportation—What information needs to be provided to the Ground Support Unit?
- Rehabilitation, Repair, Decontamination, and Disposal—What information should be included on the transportation map regarding disposal sites or areas for repair or decontamination?
- Communications—What information would be helpful in selecting places to put repeater towers?
- Technology—Is there a need for infrared satellite, Internet, or geographic information systems (GIS)?
- EEI - all information is not equally useful or important. Some valid information may not support situational awareness or decision support requirements. NIMS uses the term Essential Elements of Information (EEI) to describe important and standard information items which support timely and informed decisions.

**Information**

Information is data that has been validated and analyzed into a useable format for the IMT.

To produce information:

- Gather data from all sources relative to the incident.
- Plan how and what information will be needed.
- Consider the past, present, and future of the incident.
- Remember data is often flawed.



Visual 4.7

## INFORMATION

Data refers to information that has not yet been validated or analyzed.

Information is data that has been validated and analyzed into a useable format for the IMT.

In NIMS, “intelligence” refers exclusively to threat-related information developed by law enforcement, medical surveillance, and other investigative organizations.



To produce information:

- Gather data from all sources relative to the incident.
- Plan how and what information will be needed.
- Consider the past, present, and future of the incident.
- Remember data is often flawed.

Do not take information at face value.

- Ensure all data is validated and analyzed.
- If there is an urgent situation and data must be passed along without validation, it is very important to remind the person receiving the data that it has not yet been validated.

**Sources of Information**





Visual 4.8

## SOURCES OF INFORMATION

**Information: Initial Response**

- Initial responders.
- Completed ICS Form 201.
- Completed ICS Form 209 or IAP if the incident has been going on for a while.
  - Incident progression mapping.
  - Past documents and records.
  - Incident history can provide insight into the future.
- Seek and obtain anything that explains what has gone on and why.





Visual 4.9

Visual 4.9

**Information: Local Jurisdiction**

- Maps, blueprints, charts
- Preplans, permits, inspections, maps ("Right-to-know" documents)
- Databases
- Past incidents
- Resources
- GIS shape files

Visual 4.10

Visual 4.10

## INFORMATION: INITIAL RESPONSE

ICS Form 201 Incident Briefing can be a useful resource for incident information. ICS Form 201 is designed to be separated. One half goes to the Situation Unit Leader, the other half goes to Resources Unit Leader. Carry blank copies so you can document from a verbal briefing, if necessary.

## INFORMATION: LOCAL JURISDICTION

The Situation Unit Leader should:


- Inventory what resources are available for mapping.
- Talk to local, state, or Federal agency GIS groups to coordinate the capture of information.
- Get a list of people and their phone numbers, and determine how they are going to function in an emergency environment.
- Acquire information from previous incidents.
- Contact local or state emergency coordinators.

**Information: IMT**

What information might each person be able to provide?

- PSC
- IC
- OSC
- PIO
- Air Operations
- SOFR
- RESL
- GSUL

- FACL
- Personnel On Scene
- Responsible Party

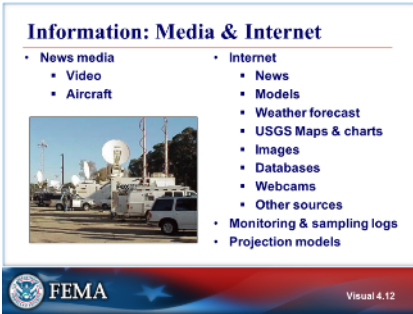


FEMA Visual 4.11

Visual 4.11

**INFORMATION: IMT**

- Planning Section Chief—Initial briefing
- Incident Commander—Objectives, contacts, and concerns
- Operations personnel—Situation status, progress, risks and threats, and needs; major source of information for the SITL.
- Public Information Officer—Public, media, and political concerns
- Air Operations—Aerial observations, air facilities, and hazards
- Safety Officer—Hazards, injuries, and observations
- Resources Unit Leader—Resources on incident (ICS Form 209) and available resources for Situation Unit Leader and IAP
- Ground Support Unit Leader—Transportation
- Facilities Unit Leader—Facility locations and availability
- Environmental Unit Leader—Scientific evaluation, projection models, and data interpretation
- Personnel on scene—Identify first responders
- Responsible Party—Obtain product or facility information



Visual 4.12

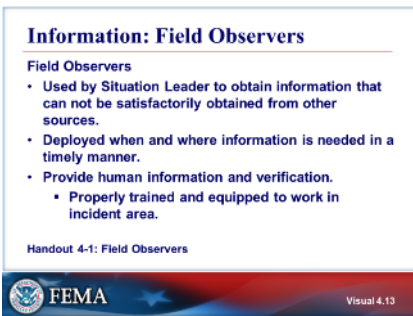
## INFORMATION: MEDIA & INTERNET

News media:

- Media may identify potential incidents.
- Validate and analyze media information before declaring it as information.

If you have access to the Internet, it can be a useful source of information such as:

- Status of the incident
- Models
- Weather forecasts
- USGS maps and charts
- Aerial and satellite images
- Databases (such as the National Wildfire Coordinating Group Web site)
- Webcams
- Other sources (Tier II reports, U.S. Geological Survey for example)



Visual 4.13

## INFORMATION: FIELD OBSERVERS


Incident-specific information is gathered by Field Observers (FOBs). FOBs are activated by the Situation Unit Leader to gather information. FOBs are used to get information when other sources of information cannot verify what you need to know.

Refer to Handout 4-1: Field Observers and review.



**Information: Imaging**

- Imaging
  - Aerial
  - Digital
  - Film
  - Video
  - Infrared
  - Satellite
- Assign a DPRO to catalog



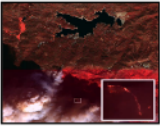


FEMA Visual 4.14

Visual 4.14

**Information: Infrared**

Types of Infrared:

- Line Scan
- Forward-Looking Infrared
- Handheld
- Satellite

FEMA Visual 4.15

Visual 4.15

## INFORMATION: IMAGING

**Explain:** There are a number of useful imaging tools such as photos, video, infrared, and satellite. Each has an important role in conveying what is going on at an incident.

## INFORMATION: INFRARED

Infrared imaging cameras record differences in heat. Materials with different heat capacities show up as different colors. They can be used to track or locate materials that are difficult to see at night or beneath smoke, but fog or clouds can render them ineffective.

Line scan is taken from fixed wing aircraft. It is usually used to cover large areas such as wildfires, floods, or oil spills. Ordered through the National Geographic Area Coordination Centers, it works best at night. Line scans also require an interpreter to accurately translate the scan onto a map. Infrared line scan is the oldest and uses the most resources.

Forward-looking infrared is used by police, day or night. Cameras can be cross-referenced with a global positioning system (GPS). It is good at tracking large chemical spills, floods, and wildfires, and for locating victims. Forward-looking infrared is often mounted on helicopters but can also be handheld.

Handheld is another type of satellite infrared. Handheld infrared is used with GPS to waypoint information. No special helicopter is needed. It can be used on foot, in vehicle, or in a helicopter.

**Information: Aerial Mapping**

- Advantages
  - Fast
  - Good visibility
  - View incident as a whole - GPS to record perimeters and other features
- Disadvantages
  - Aircraft availability, operations priority, mechanical issues, weather
  - Few skilled mappers or observers
  - Expensive

FEMA Visual 4.16

Visual 4.16

**Information: Modeling**

- CAMEO
  - ALOHA used for airborne plume modeling.
  - MARPLOT plots the plume on a map – can be used as a stand alone mapping program
- WISER
  - First Responder tool – available as an “App”
- HPAC
  - Predicts effects of Hazmat release into atmosphere & imports to GIS
- CALPUFF
  - Air Quality dispersion model
- CATS
  - Consequences Assessment Tool Set
  - Disaster modeling program

FEMA Visual 4.17

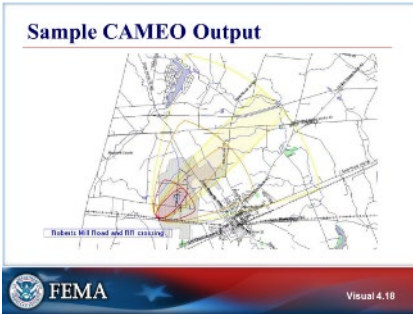
Visual 4.17

## INFORMATION: AERIAL MAPPING

## INFORMATION: MODELING

A GIS system is needed to use these modeling programs. Generally, a technical expert will run these programs.

- Computer-Aided Management of Emergency Operations (CAMEO)—NOAA - A system of software applications used widely to plan for and respond to chemical emergencies.
  - ALOHA – plume modeling.
  - MARPLOT – mapping program that links to ALOHA and can be used as a standalone mapping tool (and it is free).
- Wireless Information System for Emergency Responders (WISER)—A system designed to assist first responders in HAZMAT incidents.
- Hazard Prediction and Assessment Capability (HPAC)—Software system that provides the means to accurately predict the effects of hazardous material released into the atmosphere.
- California Puff model (CALPUFF)—Air quality dispersion model.
- Consequences Assessment Tool Set (CATS)—Disaster modeling software.



Visual 4.18

## SAMPLE CAMEO OUTPUT

This output from CAMEO shows a plume model displaying the concentration of ammonia after a chemical spill.



Visual 4.19

## DEBRIEFING

**Debriefing (Cont.)**

- Debriefing incident personnel is **EXTREMELY** important.
  - Can be the best source of accurate and timely input.
  - Information for maps and displays.
  - Feedback on quality of products.
  - Heads-up on product needs.

The FEMA logo and 'Visual 4.20' are at the bottom.

Visual 4.20

## DEBRIEFING (CONT.)


Debriefing of incident personnel is extremely important. It can be the best source of accurate and timely input.

Obtaining feedback on the products produced by the Situation Unit is important to ensure that the information is up to date and useful. Questions to ask to obtain feedback include:

- Do the maps and charts accurately portray the incident?
- Is there any additional information that you need?
- What is the current state?

**Debriefing Methods**

- Obvious debriefing station with maps and displays.
- Contact personnel on scene.
- Seek out personnel at base.
- Remove transfer via technology.
- Include specific requests on ICS-204's.



FEMA Visual 4.21

Visual 4.21

**Encourage Debriefing**

- Remind personnel of need to debrief at Planning Meeting and Operational Briefing
- Place DPRO at convenient location.
- Ensure availability of personnel at Unit.
- Let Situation Unit know debriefing is a priority.
- Remind IMT at meetings.
- Question tactfully.

What are the advantages and disadvantages of human information?

FEMA Visual 4.22

Visual 4.22

## DEBRIEFING METHODS

Debriefing operations can be the best source of information, but it can be challenging. Operations personnel are out working all day, so make the debriefing process easy and accessible to them.

## ENCOURAGE DEBRIEFING

Debrief techniques:

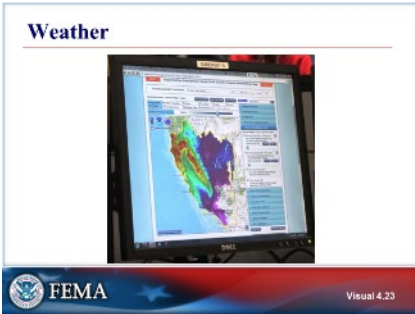
- Remind personnel during the Operational Briefing that they will need to debrief once they return from the field.
- Ensure that Display Processors are available.
  - If someone walks into the office and no one is there, they are likely to walk right out.
- Let everyone in Situation Unit know debriefing is a priority.
- Remind the IMT during meetings of the importance of debriefing.
- Tactfully ask questions and focus on the facts.

Advantages to human information:

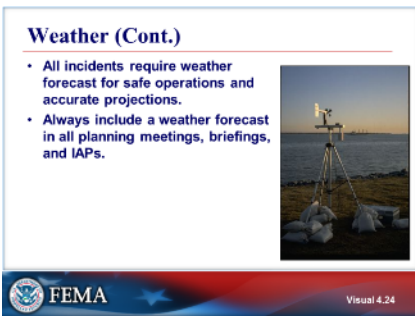
- Versatile and real time communication.
- People make immediate interpretations.
- People can make immediate adjustments.
- People are perceptive and sensory.

Disadvantages to human information:

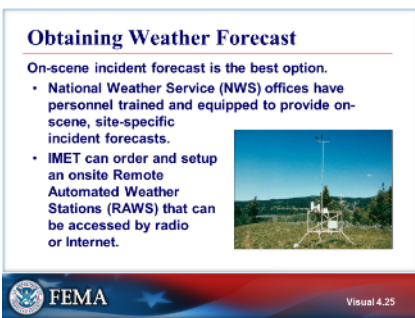
- Perceptions, prejudices, feelings, attitudes, and emotions
- Variable skill level
- Sensory capabilities
- Human error and Embellishment



Visual 4.23



Visual 4.24



Visual 4.25

## WEATHER

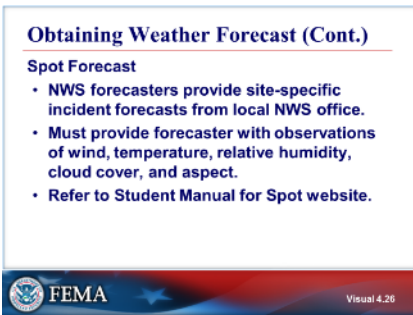
## WEATHER (CONT.)

## OBTAINING WEATHER FORECAST

The National Weather Service (NWS) has offices with trained personnel equipped to provide on-scene, site-specific incident forecasts. You need to justify whether to have an Incident Meteorologist (IMET) on scene or determine if they can do their job from an office. The IMET can setup their operations in the field at various locations.

A Remote Automated Weather Stations (RAWS) can be set up onsite as well. RAWS technicians come in to set up these stations. The stations track weather and wind direction. Fixed RAWS Website:

<http://www.raws.dri.edu/index.html>



Visual 4.26

## OBTAINING WEATHER FORECAST (CONT.)

The purpose of the Spot Forecast is to provide the weather forecast for a specific rather than entire area.

To request a spot forecast, you provide the weather person with a field observation forecast first, this alerts them there is an incident going on. The NWS will observe weather at this location all day. The NWS needs to make adjustments in their forecast based on information gathered in the field. You must gather observations of wind, temperature, relative humidity, cloud cover, and sheltering.

Request a spot forecast for each future operational period 1–2 hours before the Tactics or Planning Meetings.

NWS forecasters provide site-specific incident forecasts from local NWS office. This forecast will be much more accurate and detailed for your incident than an area forecast that often covers hundreds of square miles. The forecaster should be provided with observations such as wind temperature, relative humidity, cloud cover, and aspect.

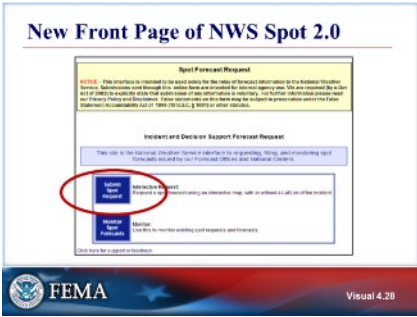
Spot website: <https://www.weather.gov/spot>



Visual 4.27

## TAKING WEATHER OBSERVATIONS ONSITE

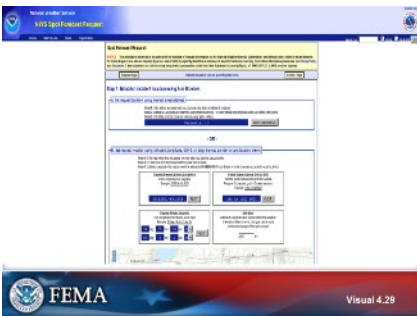
Refer to Handout 4-2: Taking Good Weather Observations.



Visual 4.28

## NEW FRONT PAGE OF NWS SPOT 2.0

To begin the request, you select the Submit Spot Request button.

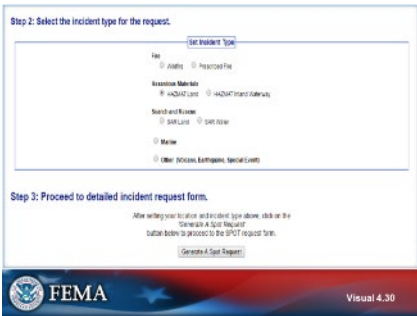


Visual 4.29

## SPOT FORECAST

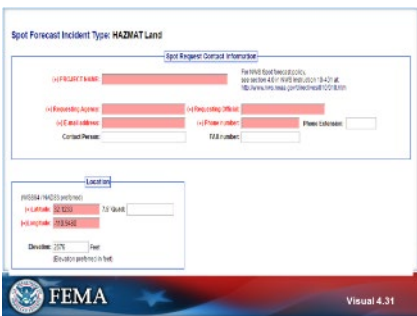
After selecting the Submit Spot Request button, this image shows Step 1 (the top portion of the screen).

The next visual shows Steps 2 and 3.



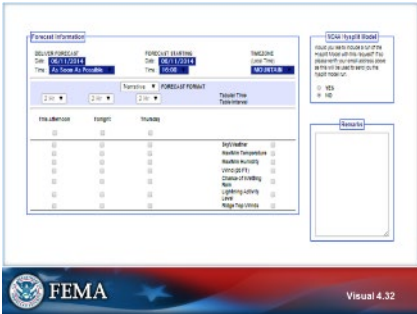
Visual 4.30

This image shows Steps 2 and 3 (which are located towards the bottom portion of the screen).



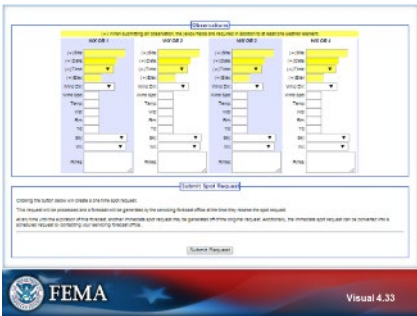
Visual 4.31

This image shows the next input screen.



Visual 4.32

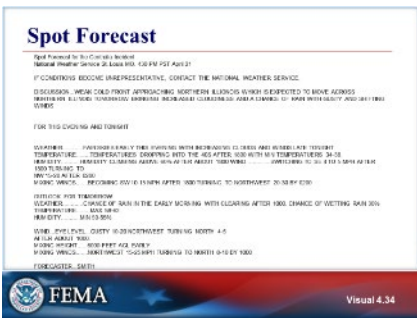
This visual shows what forecast times and weather variables are needed for the incident.



Visual 4.33

This visual shows the weather observations input screen. It allows up to four sets of weather observations, if available, to be submitted. The minimum is one set of observations.

When done, click the Submit Request. Once the form has been submitted, the NWS will begin working on the request.

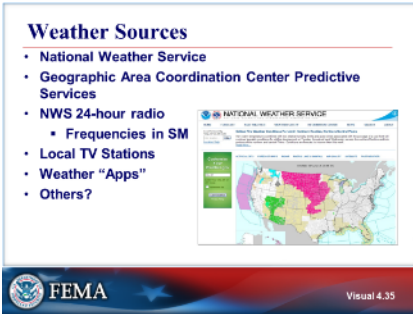


Visual 4.34

### SPOT FORECAST

Once your request has been processed, you should receive a response that looks like the image on the screen. This is an example of what the Spot Weather forecast will look like. This is the one for the Centralia Activity.





Visual 4.35

## WEATHER SOURCES

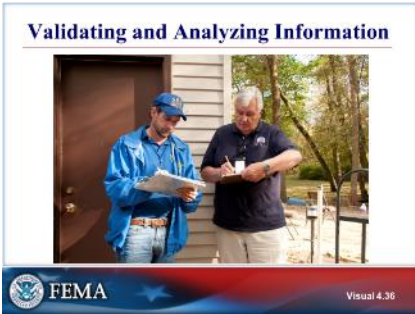
Websites can be a useful source of information. You can gather detailed weather information on fire, as well as extreme hazards such as snow, rain, and tornados. If you have Internet access, go to each website. If you do not have Internet access, you can call the NWS and provide them with the information on the spot forecast request form.

The National Oceanic and Atmospheric Administration (NOAA) puts out a continuous weather broadcast of weather information on the NOAA weather radio station or on the Internet. Website: <https://www.weather.gov>

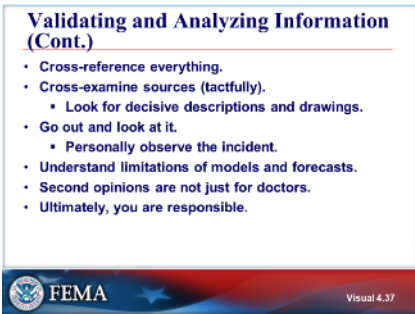
Wildland Geographic Area Coordination Centers Predictive Services provide additional weather information related to wildfire incidents and have links to NWS Weather Sites and other incident management sites. Website: <http://gacc.nifc.gov>

Initial forecast information:

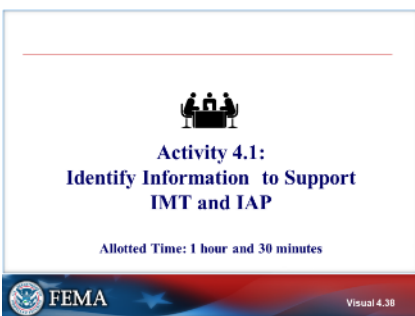
- Check media sources on dispatch and in route.
- Locate the local NWS office for more accurate and detailed weather information, and obtain the current area forecast:
  - Online
  - Telephone
  - 24-hour broadcasts
    - All NWS offices broadcast constant forecasts on one of seven VHF radio frequencies so as not to feed back on another NWS station: 162.400, 162.425, 162.450, 162.475, 162.500, 162.525, 162.550
  - TV
  - Newspaper



Visual 4.36



Visual 4.37



Visual 4.38

## VALIDATING AND ANALYZING INFORMATION

### VALIDATING AND ANALYZING INFORMATION (CONT.)

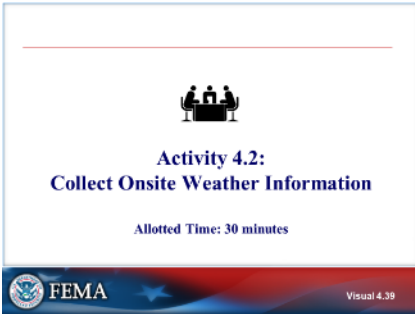
While you are gathering information it is important to:

- Cross-reference everything.
- Cross-examine sources.
- Personally observe the incident.
- Understand the limitations of models and forecasts.
- Remember that second opinions are not just for doctors.
- Remember you are ultimately responsible.

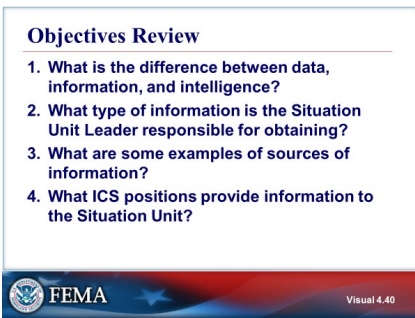
### ACTIVITY 4.1: IDENTIFY INFORMATION TO SUPPORT IMT AND IAP

The instructor will introduce Activity 4.1.

You will have 1 hour and 30 minutes to complete the activity.



Visual 4.39



Visual 4.40

## ACTIVITY 4.2: COLLECT ONSITE WEATHER INFORMATION

The instructor will introduce Activity 4.2.

You will have 1 hour and 30 minutes to complete the activity.

## OBJECTIVES REVIEW

### Unit Enabling Objectives

- Describe the difference between data, information, and intelligence.
- Identify information the Situation Unit Leader may be responsible for obtaining.
- Identify sources of information.
- Identify the ICS positions that provide information to the Situation Unit.

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# **Supplemental Materials**

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## Handout 4-1: Field Observers

### Operational Observations

- Identify and map incident information
  - Location of incident
  - Progress and note problem areas
  - Equipment limitations or opportunities
  - Safety zones or evacuation areas
  - Lookout locations
  - Operational infrastructure

### Logistical Observations

- Identify and map information for logistical support
  - Traffic patterns
    - Access road and bridge capacity
    - Bridges and culverts
    - Surface conditions
    - Turn-arounds
    - Roads not on maps
    - Non-incident traffic
  - Fuel and service locations
  - Water sources
    - Potable vs. non-potable
    - Ownership, use sensitive?
    - How to access
      - Pipe
      - Hydrant
      - Pump
      - Portable tanks
    - Storage, flow
  - Incident considerations
    - Possible movement
    - Safety
  - Equipment types
  - Facilities
    - Incident base, camps, staging areas

- Access
- Size
- Water
- Communications
- Land sensitivities
- Ownership
- Drop Points
  - Designated by Operations and coordinated with GSUL who numbers and marks
  - SITL Maps
  - FOBs may locate and recommend Drop Points
  - FOBs maps and may help GSUL mark
  - Drop Points should be located where they safely meet Logistics and Operations needs
- Helibase vs. Helispot
  - Operations & Air Ops MUST approve
  - FOBs advise SITL of recommendations
  - FOBs may be sent to locate
  - Check for aerial hazards and glide path
  - Check winds
- Slope less than 10%
- Sensitive resources
- Helibase considerations
  - Phone lines
  - Roads
    - Ground and air traffic considerations
  - Sensitive areas
  - Ownership

### Threats

- Resources & Improvements
  - Identify local info sources
  - Recon
- High-value resources
  - Improvements
    - Residential
    - Commercial



- T & E species
- Cultural
- Recreational
- Natural
- Water

**Safety**

- Potential hazards
- Power lines and poles
- Gas leaks
- Retaining walls
- Damaged roads and bridges
- Hazardous materials
- Collapse
- Animals
- People

**Informational Needs**

- Perimeter /Incident locations (OSC, IC)
- Threatened Areas (OSC, IC)
- Fuels (OSC)
- Weather Observations (OSC)
- Direction/Rate of Spread (OSC)
- Access Routes (OSC, LSC)
- Possible Control/Facilities Locations (OSC, LSC)
- Hazards/Water Sources (OSC, SOFR)
- Damage (IC, Comp/Claims)

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## Handout 4-2: Taking Good Weather Observations

*John F Saltenberger  
Predictive Services  
Northwest Geographic Area Coordination Center  
Portland, OR*

### **Preface:**

The purpose of taking weather observations during a wildfire or prescribed fire project is to record environmental conditions prevalent at the site. Depending on the size of the project and the complexity of the terrain, several separate weather observation sites may be necessary to adequately convey weather conditions representative of the entire burn site.

Accurate weather observations are important in wildland fire management for several reasons:

1<sup>st</sup>: Meteorologists build their spot weather forecasts based on the observations reported from the fireline. The forecaster uses the observation to build a mental model of weather pattern in the vicinity of burn site. The more accurate and representative the weather observations are, the more effectively a meteorologist can forecast weather conditions at the site. This results in better fire behavior forecasts. If fireline weather observations are incomplete or unrepresentative, the forecaster will have a much more difficult time accounting for localized effects.

2<sup>nd</sup>: Meteorologists seek to verify the accuracy of their forecasts by comparing weather conditions observed at the site versus what was forecast. When differences are noted, the meteorologist can potentially learn from the errors and correct for the next forecast. The belt weather kit observation constitutes the best record of weather conditions near the fireline.

3<sup>rd</sup>: Belt weather kits observations become part of the official fire documentation record. If there is an investigation or litigation following some accident on the fire, belt weather kit observations comprise a key component for re-constructing environmental conditions surrounding the accident. These can prove critical during litigation.

# 1. Siting

## ***Key Point:***

*Regardless of whether the fire is a prescribed fire project or a wildfire, the weather observer should strive to pick observation sites that most accurately reflect environmental conditions around the fire's location.*

## ***Tips:***

Consider whether to take a weather observation on a ridgetop, midslope or drainage bottom location. Is the fire site exposed or sheltered? What is the aspect and slope? What kind of surface texture? The choice of observation sites should reflect the type of terrain the fire front is most actively burning in. Selecting an unrepresentative site will result in weather observations that don't truly reflect the environmental conditions of that incident, division or burn site.



## **Representative fuels**

Once safe representative sites have been selected, the weather observer should try to take the observations in the same fuel type the fire is most active in. If the fire is spreading in timber litter, try to take the observations in similar unburned timber. The same is true for brush or grass fuel types.

### Minimizing fire influences

The weather observer should avoid taking observations in the black since burned areas tend to be unrepresentatively warm and dry. Attempt to find a safe site *upwind* of the burned area if at all possible. If the observer has no choice but to take an observation in the black, make sure to note it in the remarks section of the log.

The weather observer should also take care to minimize localized weather effects generated by the *fire itself*. Take weather observations away from gusty indraft breezes and radiant heat in the vicinity of the flaming front. These are very localized conditions that don't reflect the area's general conditions. Generally, well ventilated areas in the shade are desirable spots for belt weather kits to be most effective.



## 2. Observation process

### **Key Point:**

*To be effective, belt weather kits must be properly maintained and operated. Inspect kits for defects prior to each fire assignment. Old, dirty or broken parts should be replaced. Electronic sensors must be calibrated routinely during fire assignments. Proper procedure must be followed to extract the most accurate information from a weather observation.*

### **Tips:**

Here are some considerations to keep in mind:

- Check sling psychrometers for separated mercury columns. These can sometimes be corrected by exposing the thermometer to very cool temperatures such as an ice bath.
- Replace dirty wicks on wet bulb thermometers with a clean wick.

- Test the ball in Dwyer wind meters for free movement. Static electrical charge buildup, moisture, or dirt can lodge the ball in the tube.
- Electronic temperature and humidity sensors should regularly be calibrated against weather instruments of reliable accuracy. Check that the batteries are fresh.
- Well maintained sling psychrometers are still the most accurate, durable and reliable indicators of temperature and moisture. They function as well in extreme conditions as in moderate conditions.

Regardless of whether the kit is a traditional sling psychrometer or electronic sensor, get into the habit of letting it acclimatize for several minutes in a shaded, breezy area before beginning an observation. This allows the sensors to gradually adjust to environmental temperature and humidity. Avoid exposing the kit to body heat, sweat, ash, dirt, and direct sunlight. The observer should be careful to store the kit in locations away from temperature extremes such as vehicle dashboards or in line gear pockets.

**Avoid direct sunlight during temperature and humidity observation**

The wet bulb/dry bulb observation *must* be taken in shade. Even if the site is grassy (i.e. no shadows from an overstory) the instrument must be protected from direct sunlight. If necessary, the weather observer can use his or her own body shadow to avoid exposing the kit to sunlight.



When using a traditional sling psychrometer, be sure the wick is thoroughly wetted before beginning to swing. Distilled water is preferred. Bottled water is the next best alternative. New wicks may tend to repel water droplets from the wet bulb so the observer may need to gently rub the wick against the side of the water bottle to eliminate air pockets. A soaked wick is the goal.

Continue swinging the sling psychrometer until the wet bulb temperature is reached. This may take several minutes. Continue to check the wet bulb temperature every thirty seconds until it reaches its lowest value. In very dry conditions it may be necessary to re-wet and continue swinging until the lowest value is attained. When the wet bulb temperature ceases descending, the correct value has been reached. Read and record the dry bulb immediately after the lowest wet bulb reading is obtained.

When wet bulb and dry bulb temperature have been determined, compute the dew point and relative humidity using the paper tables included with the kit. Select the appropriate table for the altitude range corresponding to the observation site. Plastic slide rules for computing dew point and humidity should only be used if a printed table is not available. Use of the printed tables will provide greater accuracy.

A time saving strategy is to conduct the wind observation while the temperature sensor is acclimatizing to ambient conditions. Wind observations need not be taken in shade but they should still reflect the ambient conditions affecting the fire.



**Points to remember about eye level wind observations.**


- The observer should take care to face directly into the wind and closely observe the wind speed indicator fluctuations. Exposure to sunlight is not a concern during the wind observation.
- An eye level wind speed measurement requires at least one full minute of sampling and preferably more.
- When using a Dwyer tube, mentally average the wind speed and note the peak gust during the sampling period.
- Electronic sensors make wind averaging easy. They are more accurate and are preferred for eye level wind speed observations.
- Remember: The wind direction is defined as the direction the wind is coming from.

## 3. Observation logging and remarks

### **Key Point:**


*Careful record keeping is as important to the weather observation process as every other step. It's a good idea for the observer to double check recorded values for obvious errors before logging and submitting.*

### **Tips:**

 A firefighter wearing a yellow jacket and a black helmet with a green emblem is standing next to a green vehicle. He is holding a weather instrument, possibly a wet bulb thermometer, and appears to be taking a reading. The vehicle has a white sign with the letters 'IAS' on it. There is a red fire hose reel on the vehicle's surface.	<p style="text-align: center;"><b>Effective logging</b></p> <p>Carefully note the date, time and location of each weather observation. Include aspect, elevation, exposure and fuel type whenever possible. If the observer is changing locations, this becomes even more important.</p> <p>Don't confuse the wet bulb, dry bulb and dewpoint temperatures. Double check to insure the proper values are noted in their respective columns of the observation form. <i>Use clear penmanship.</i> This is a frequent source of error.</p>
--	--

Compare the latest weather observation against those taken during previous hours. *Stay alert for any obvious discrepancies.* Weather conditions naturally fluctuate during the course of a day but large changes may indicate either a significant weather event or an instrument malfunction. To reduce potential errors, it is a good idea to cross check weather observations with nearby observers.



<b>Best use of the remarks column</b>	
<p>The remarks column can be used to log significant features such as:</p> <ul style="list-style-type: none"><li>• Alto-cumulus clouds, cumulus buildups or thunderstorms.</li><li>• Lightning</li><li>• Smoke column developing a pyro-cumulus cap cloud.</li><li>• Lenticular clouds</li><li>• Sudden wind shifts</li><li>• Changing cloud cover</li><li>• Dust clouds radiating away from downdraft impacts.</li><li>• Inversions</li><li>• Dust devils</li><li>• Showers or virga</li><li>• Upper level winds significantly different than surface winds</li><li>• Other significant features since last observation</li></ul>	


Lastly, it's a good idea to remark whether the observations were made with an electronic weather sensor or traditional sling psychrometer.

## 4. Transmission of observations

### ***Key Point:***

*The most accurate weather observation is of little use unless it is properly received by those who need its information. The weather observer should make sure that the chain of communication is functioning rapidly and efficiently at both ends.*

### ***Tips:***

	<p>Work out a plan to transmit weather observations to the Incident Communications Unit or local fire dispatch office on a regular schedule as necessary. Double check that each observation has been received clearly by asking to have it repeated back. This technique is effective at reducing errors.</p> <p>Remember that weather observations may need to be recorded and transmitted more than once per hour. Fast breaking weather changes can endanger firefighter safety so be ready to act rapidly when the situation requires.</p>
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It's a good idea make sure the observation is being properly relayed to the Incident Meteorologist, weather office, or other affected users. This is particularly true during critical burning conditions or significant weather changes. *Don't assume that weather observations are automatically being received by the proper users.* The weather observer may need to take the initiative to verify that the information is being passed up the line.

## Activity 4.1: Identify Information to Support the IMT and IAP

### Information Activity 4.1—Unit 4

#### Purpose

The purpose of this activity is to allow students to identify the information necessary to support the IMT and the IAP.

#### Objectives

Students will:

- Distinguish the difference between data, information, and intelligence.
- Determine and distribute the information necessary to support the IMT and the IAP.

#### Activity Structure

This scenario-based activity is scheduled to last approximately 90 minutes, including small group discussions and presentations of each group's answers. Using the scenario introduced in Activity 3.1 and the ICS Form 201 Incident Briefing students will break into groups and distinguish the difference between data, information, and intelligence. In addition, Students will determine the type of information that is required to support the IMT and IAP development. Groups will then present their findings during the group discussion phase, led by the Instructor.

#### Rules, Roles, and Responsibilities

Students will be divided into groups of 4–6. Each group will assume the role of the Situation Unit Leader. **Following are the specific activities and instructions for your participation in the activity:**

1. Within your work group, select a group spokesperson.
2. Review the information provided. Given the information in the scenario and the supporting information, identify possible additional information needs.
3. Identify the potential information needs for the following positions.
  - IC
  - OSC
  - PSC
  - PIO
  - SOFR
  - LSC
4. Determine how you would organize or display this information.
5. Identify the potential information needs for the IAP.
6. Prepare to briefly describe the status of the incident.

7. Present your group's approach to the full class. From this point forward, your class presentation should be presented as if you were conducting a briefing.

Refer to EL\_964\_ACT\_4.1\_ICCS\_Form\_201\_1\_of\_3.pdf

Refer to EL\_964\_ACT\_4.1\_ICCS\_Form\_201\_2\_of\_3.pdf

Refer to EL\_964\_ACT\_4.1\_ICCS\_Form\_201\_3\_of\_3.pdf

## Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	5 minutes	Classroom
Discussion/Documentation	60 minutes	Small Groups
Debrief/Review	10 minutes	Classroom

## Activity 4.2: Collect Onsite Weather Information

### Collect Onsite Weather Information Activity 4.2—Unit 4

#### Purpose

The purpose of this activity is to have the students collect onsite weather information using a Belt Weather Kit or a handheld electronic weather instrument.

#### Objectives

Students will learn the basic of collecting onsite weather data necessary for input into the Spot Weather Forecast Request.

This activity is part of the Position Task book. Competency 2, Behavior 3, Task 4.

#### Activity Structure

Instructor will demonstrate how to use a Belt Weather Kit and/or a handheld electronic weather instrument.

Student groups will then take weather observations outside the classroom a few times during the day or week depending on class size and enthusiasm allowing each student the opportunity to use each of the instruments.

Students should compare their observations with those in other groups. Note any differences between the Belt Weather Kit and the electronic instruments.

### Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	10 minutes	Classroom
Discussion/Documentation	20 minutes	Small Groups
Debrief/Review	10 minutes	Classroom

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# Unit 5: Display Processing

STUDENT MANUAL

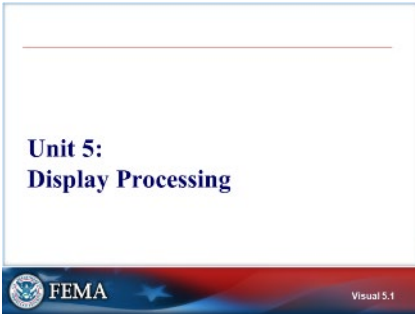
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Visual 5.1

## UNIT 5: DISPLAY PROCESSING

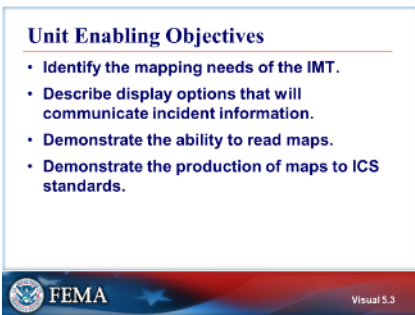
Through this unit, students will gain an understanding of the Situation Unit's responsibility to develop displays and maps. Students will also discuss what type of displays and maps may be required by various members of the IMT.



Visual 5.2

## UNIT TERMINAL OBJECTIVE

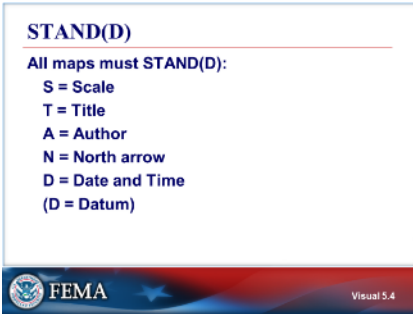
Identify how to select and use appropriate methods to display incident information.



Visual 5.3

## UNIT ENABLING OBJECTIVES

- Identify the mapping needs of the IMT.
- Describe display options that will communicate incident information.
- Demonstrate the ability to read maps.
- Demonstrate the production of maps to ICS standards.



Visual 5.4

## STAND(D)

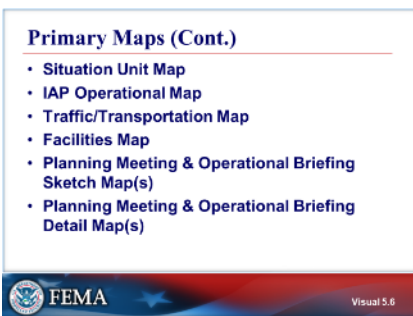
All maps must STAND(D), which means they must include:

- S = Scale - If you hand produce a sketch map that is not to scale, remember to write “not to scale” somewhere on the map.
- T = Title – Title the map by incident.
- A = Author
- N = North arrow
- D = Date and Time - time—You will produce many maps, and you want to make sure you have the most current version as the incident progresses.
- (D = Datum) - calculation for latitude and longitude
  - The parentheses are to indicate that the datum is included on GIS and GPS products.
  - Hand-drawn sketches do not typically include datum.



Visual 5.5

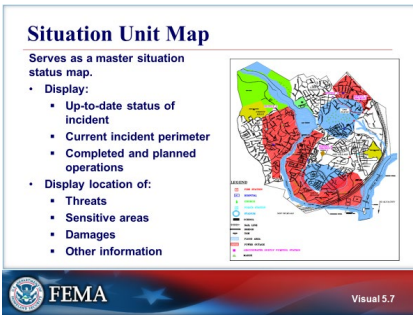
## PRIMARY MAPS



Visual 5.6

## PRIMARY MAPS (CONT.)

All of these maps need to be covered with laminate.



Visual 5.7

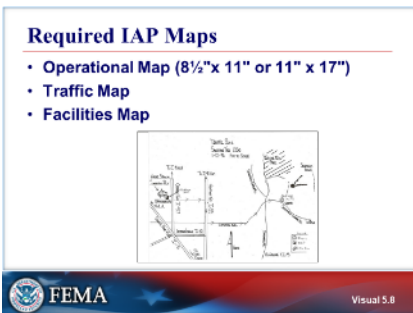
## SITUATION UNIT MAP

The Situation Unit Map is the master map where all essential situational information is gathered. It is best if the Situation Map is located next to the Situation Unit, but it is important to make sure maps are readily available to the Operations Section Chief and the Incident Commander.

The Situation Unit Map is a real-time map so that Operations or the Incident Commander can see the most up-to-date progression of the incident.

- The map is located at the ICP.
- It is color-coded and therefore not easily photocopied.
- It should be covered with laminate so information can be added or erased easily.
- It is essential that this map is kept up to date. There may be information on this map that is not on any other map.

There may be more than one Situation Map. For example, during some incidents, the Incident Commander will have a copy of the Situation Map in his or her office and the Operations Section Chief will also have a copy in his or hers.



Visual 5.8

## REQUIRED IAP MAPS

Maps that must be included in the IAP:

- Operational Map
- Traffic Plan Map
- Facilities Map


**IAP Operational Map**

The purpose of the IAP Operational Map is to display:

- Current incident perimeter.
- Operational boundaries.
- Operational activities.
- Facilities related to operations.

Note:


- Required for the shift IAP.
- Copy paper size 8½" x 11" in or 11" x 17" is best (it must be photocopied).



Visual 5.9

Visual 5.9

**Sample IAP Operational Map**




Visual 5.10


Visual 5.10

**Traffic Plan Map**

Purpose of the Traffic Plan Map is to display:

- Preferred travel routes to facilities and operational areas.
- Drop points ● DP-10
- Staging areas S
- ICP
- Helibases/helisports H
- Main route for resources arrival and departure.

Note: Traffic Plan is Ground Support function.



Visual 5.11

Visual 5.11

## IAP OPERATIONAL MAP

The IAP Operational Map shows what is important to the shift including drop points, the incident perimeter, operational boundaries, and facilities related to the incident.

Develop an 8½" x 11" or 11" x 17" map so it can be photocopied and included in the IAP. It is possible to have an incident that requires multiple pages of maps.

## SAMPLE IAP OPERATIONAL MAP

This image shows an example of an IAP Operational Map.

## TRAFFIC PLAN MAP

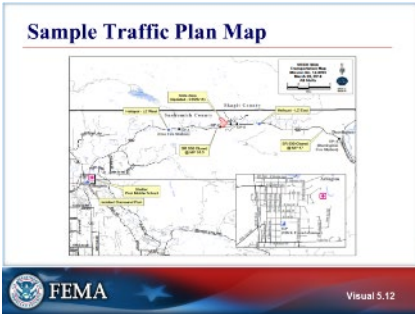
Ground Support is responsible for the Traffic Plan, which is the roadmap for the incident. It identifies all drop points, staging areas, ICPs, helibases, and helispots.

May be a separate map or may be on the IAP map.

Given to drivers coming out of Ground Support carrying supplies.

Ground Support is responsible for the Traffic Plan.

- All drop points and staging areas must be approved by Operations and Ground Support.
- Catalog all drop points and staging areas and list locations.

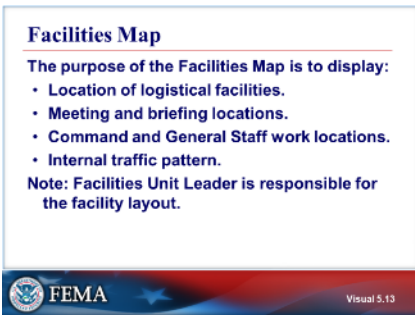


Visual 5.12

## SAMPLE TRAFFIC PLAN MAP

This image shows an example of a Traffic Plan Map. When creating a Traffic Plan Map:

- Do not include unnecessary detail that clutters the map.
- Make travel routes obvious.
- Hand-draw the map and not to scale.
- May use highlighted road maps or map databases.



Visual 5.13

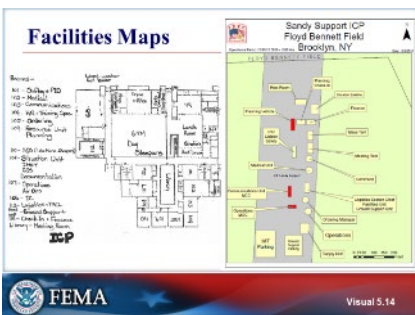
## FACILITIES MAP

The purpose of the Facilities Map is to identify the location of all the operational facilities.

The Facilities Unit Leader sketches the map; the Situation Unit Leader collects the map for placement in the IAP.

The Situation Unit Leader may assist the Facilities Unit Leader with preparation of the Facilities Map. If there is a traffic flow, it must be present on the map. The map can be created by hand or in Microsoft Word or PowerPoint.

This map will be seen by the public, so do not place any sensitive information (for example, cultural concerns such as Native American archaeological sites) from the Situation Unit Map on this map.



Visual 5.14

## FACILITIES MAPS

This image shows two different map examples.


The map on the left is a school that was used for an ICP. A floorplan was obtained of the school and the Facilities Unit Leader completed the map without any GIS support.

The map on the right was GIS generated. Google Earth or other desktop mapping software could be used to produce a facilities map.

**Planning and Briefing Maps**

The purpose of the meeting and briefing sketch maps is to clearly identify all operationally relevant information, such as:

- Incident perimeter.
- Operational boundaries.
- Facilities.




Visual 5.15

Visual 5.15

**Planning and Briefing Maps (Cont.)**

- Maps may be a sketch map, a copy of a unit map, or GIS produced large-scale map.
- Talking points on incident status, essential information, operational boundaries, and facilities must be visible to all.
- Sketch maps that are not to scale often work well for making important points stand out and visible to groups.



Visual 5.16

Visual 5.16

**Sample Planning Meeting Sketch Map**




Visual 5.17

Visual 5.17

**Sample Large Briefing Map**




Visual 5.18

Visual 5.18

## PLANNING MEETING & OPERATIONAL BRIEFING SKETCH MAPS

The purpose of the Planning meeting and Operational Briefing Sketch maps is to clearly identify all operationally relevant information such as the incident perimeter, operational boundaries, and facilities.

## PLANNING AND BRIEFING MAPS (CONT.)

The Situation Unit should at least produce a sketch map for the Planning Meeting. The map does not have to be to scale, but should indicate if it is not. The map should be large enough that all of the talking points and details are clearly visible.

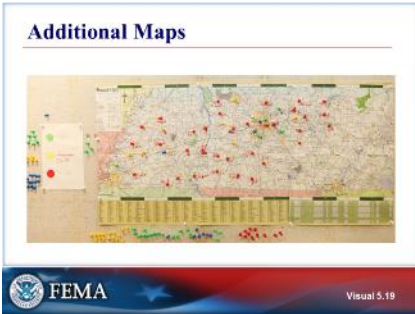
## SAMPLE PLANNING MEETING SKETCH MAP

This image shows an example of a Planning Meeting Sketch Map.

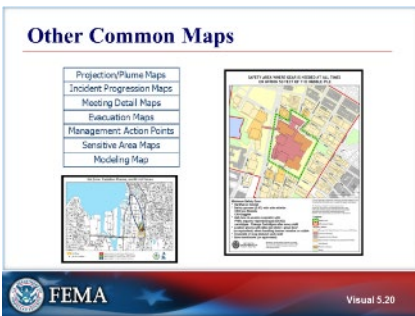
## SAMPLE LARGE BRIEFING MAP

This image shows an example of a large Briefing Map.

Briefing Maps are used to brief the responders. The incident is drawn out on this map. Briefing maps do not need major detail since much of the information is observed from a distance.



Visual 5.19



Visual 5.20

## ADDITIONAL MAPS

## OTHER COMMON MAPS


Depending on the incident, there are a number of different products you may be asked to produce:

- Plume Projection Maps provide plume projections by date and time.
- Incident Progression Maps by date and time are useful for historical documentation as well as analysis and projection. It is the map of choice when validating incident forecasts and modeling.
- Sensitive Area Maps:
  - Include areas where operational activities could cause harm.
  - May need to keep this information classified.
- Evacuation Maps identify evacuation paths and shelters.
- Management Action Points identify triggers for evacuation.
- Modeling Maps display modeling and sampling at certain areas and points.

Remember you are not making these maps for yourself. Think about the people you are serving and their needs.

**Types of Maps Used to Plot Incidents**  
Based on incident type and location

• Topographic	• Nautical Charts
• Planimetric	• Flood Control
• Hill Shade	• Sewer Drain Systems
• Ortho Photo Quads	• Blueprints
• Road Maps	• HVAC Blueprints
• Assessors Parcel Maps	• Plot Plans
• Geologic Maps	• Aerial



Visual 5.21

**TYPES OF MAPS USED TO PLOT INCIDENTS**

Depending on the incident, you may use different types of maps as the base for your Situation Unit Map.

**Sample Maps**






Visual 5.22

**SAMPLE MAPS**

These images show examples of various types of Base Maps.

**Mapping Skills**





Visual 5.23

**MAPPING SKILLS**

**Map Interpretation**

- Maps must be interpreted to:
  - Determine the topography of the incident area.
  - Describe or find locations at incidents.



Visual 5.24

**MAP INTERPRETATION**

Interpretation of maps is critical. Maps must be interpreted to determine the topography of the incident area.





**Map Legends**

- Every map produced in the Situation Unit will have a legend and STAND.
- U.S. Geological Survey (USGS) Topographic 7½-minute Quadrangles (aka 7 ½' Quad)
  - Handout 5-1 USGS Topo Map Symbols
- Incident Action Plan Maps
  - Handout 5-5 ICS and Coast Guard Map Symbols



Visual 5.25

**Topographic Map**





Visual 5.26

**Quad Maps**

If terrain is important to the incident, use a 7½-minute series USGS Quadrangle Topographic Map.

- Map scale & distances
  - 1:24,000
  - 24,000/12 = 2,000
  - 1 inch = 2,000 feet
  - 1/10 inch = 200 feet
  - 2.64 inch = 1 mile
- Contour intervals
  - Distance between elevation lines
  - Can be 5 to 100 feet, with 20 and 40 feet most common



Visual 5.27

## MAP LEGENDS

Refer to Handout 5-1: USGS Topo Map Symbols.

To properly use this handout it must be printed in color.

## TOPOGRAPHIC MAP

## QUAD MAPS

The standard incident map is the 7½-minute series USGA Quadrangle Topographic Map. The map scale is:


- 1:24,000
- 24,000/12 = 2,000
- 1 inch = 2,000 feet
- 1/10 inch = 200 feet
- 2.64 inch = 1 mile

The distance between elevation lines is called the contour interval. The contour interval can be 5 to 100 feet, but 20 and 40 feet are the most common. A map will indicate its contour interval. An explanation of how to calculate contour intervals appears later in this unit.

Produced at a scale of 1:24,000, topographic maps are commonly known as 7½-minute quadrangle maps because each map covers a four-sided area of 7½ minutes of latitude and 7½ minutes of longitude. The map area is called a “quadrangle” because the width of the map area changes according to longitude. Longitude lines are widest at the equator and closest at the poles.

**Location Descriptions**



- USA legal = Section, Township, Range Base, and Meridian
  - SE1/4, NW1/4, Sec 22 T 21N, R 33 E Mount Diablo Base and Meridian (MDBM)
  - Equals 40 acres
- Latitude & Longitude
  - Degrees Minutes & .100 minute
    - Lat N45° 30.500' x Long W118° 45.500'
    - No uniform size acres
- Many other systems



Visual 5.28

**Public Land Survey System (PLSS)**


- Created by Land Ordinance of 1785.
- Used to survey lands that ceded to U.S. after Revolutionary War.
- Baselines and Meridians
  - Describe location(s) of Initial Point(s) where surveying began.
  - Found in states & regions surveyed after 1785.

Visual 5.29

**PLSS (Cont.)**

- Base Line and Meridian Initial Point—High point where survey starts (for example, Mt. Diablo).
- Base Line extends east and west through each initial point.
- Principal Meridian extends north and south through each initial point.
- Township lines run east and west every 6 miles along the Meridian Line.
- Range Lines run north and south every 6 miles along the Base Line.



Visual 5.30

## LOCATION DESCRIPTIONS

USA legal = Section, Township, Range Base, and Meridian

- SE1/4, NW1/4, Sec 22 T 21N, R 33 E Mount Diablo Base and Meridian (MDBM)
- Equals 40 acres

Latitude and Longitude are measured in degrees minutes and .100 minute.

## PUBLIC LAND SURVEY SYSTEM (PLSS)

The Public Land Survey System (PLSS) was used to survey America's lands after approximately 1785.

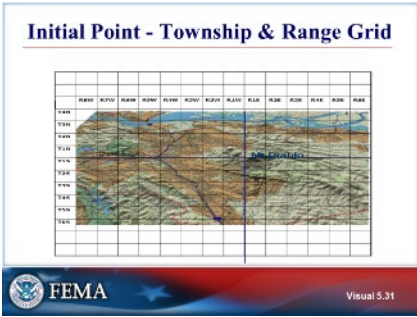
The image shows the states in color were surveyed using the PLSS. Previous to the PLSS, land was surveyed using "Mete's & Bounds"- those states are shown in white.

## PLSS (CONT.)

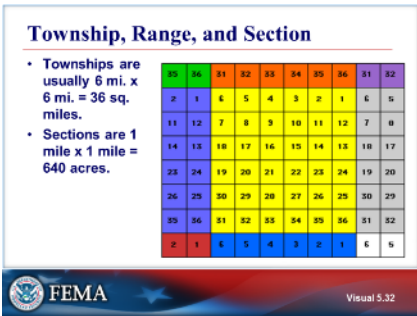
The "Initial Point" is where the Baseline and Meridians intersect. Basically an X, Y Coordinate system. The Baselines extend East and West through each initial point. Principal Meridians extend North and South through each initial point. This divides the state or states into "quadrants".

California, due to its irregular shape, has 3 initial points, Arizona has one Initial Point, Washington and Oregon share the Initial Point.

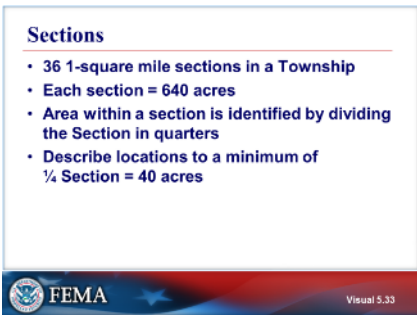
This forms the basic grid system of Township & Range. The Township lines run East & West along the Prime Meridian and are usually 6 miles apart. Each Range subdivision runs North & South and are usually 6 miles apart. There may be correction to each Township and Range that will change the 6 mile by 6 mile subdivision lines, otherwise the Township/Range forms a 36 square miles area.



Visual 5.31



Visual 5.32



Visual 5.33

## INITIAL POINT – TOWNSHIP & RANGE GRID

## TOWNSHIP, RANGE, AND SECTION

One entire Township, in the center of the map, occupies 36 sections, each one square mile. It is important to be familiar with the location systems (Township, Range and Section) if you are in an area that is surveyed with this system. It is a fairly simple system to use. The largest grouping is the township, which is named in reference to a Principal Meridian (PM) and a Baseline. T2N, R1E refers to Township 2 North (of the Baseline), Range 1 East (of the Principal Meridian). Within each township are 36 sections, each 1 square mile. Each section contains 640 acres. The sections are numbered from 1 to 36 in the order you see on the visual.

The numbering sequence is important because due to the map scale, the amount of Natural & Human Made Features in the Section, the number will not be printed in the center of the Section. In the States that use the PLSS it can be fairly easy to figure out where you are with a ruler and the map.

On the map, there is a township line every 6 miles north or south. A township is 36 square miles.

## SECTIONS

There are 36 1-square mile Sections in a Township. Each Section equals 640 acres. The area within a Section is identified by dividing the Section in quarters.

You can describe locations to a minimum of 1/4. One quarter Section, Township, and Range equals 40 acres.


**Sections (Cont.)**

- Sections can be divided into  $\frac{1}{4}$  or quarter sections (160 acres) as described below:

Area E – NW  $\frac{1}{4}$   
 Area F – NE  $\frac{1}{4}$   
 Area G – SW  $\frac{1}{4}$   
 Area H – SE  $\frac{1}{4}$

E	F
G	H

N ↓





Visual 5.34

**SECTIONS (CONT.)**

This visual shows the how a Section can be divided into  $\frac{1}{4}$  Sections.

**Townships & Ranges**

- Township numbers at the sides of a map identify east-west Township Lines.
- Range numbers at top and bottom of a map identify north-south Range Lines.

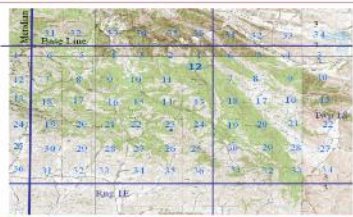




Visual 5.35

**TOWNSHIPS & RANGES**

- Township numbers at the sides of a map identify east-west Township Lines.
- Range numbers at top and bottom of a map identify north-south Range Lines.

**Topographic Map**






Visual 5.36

**TOPOGRAPHIC MAP**

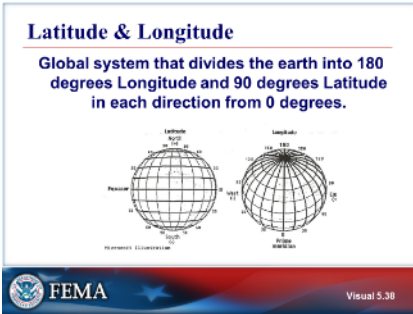
**Topographic Map (Cont.)**

NW  $\frac{1}{4}$ , SE1/4, Sec23 Twp1S Rng1E MDBM

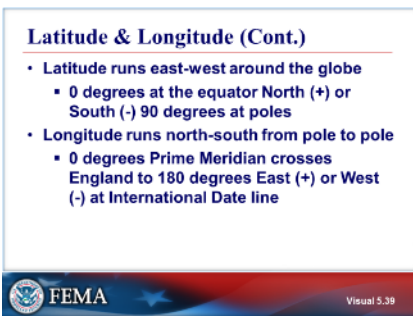



Visual 5.37

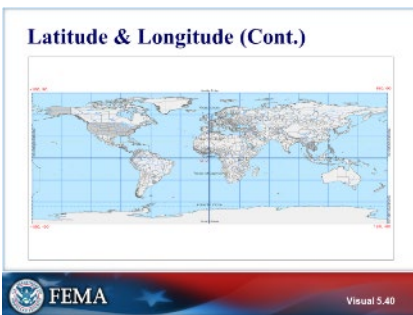
**TOPOGRAPHIC MAP (CONT.)**



Visual 5.38



Visual 5.39



Visual 5.40

## LATITUDE & LONGITUDE

Latitude and Longitude is a global system that divides the earth into 180 degrees Longitude and 90 degrees Latitude in each direction from 0 degrees.

- Degrees are divided by 60 Minutes.
- Minutes are divided by 60 Seconds or 1/100 of a minute.
- Use 1/100 of a minute on incidents due to its use by aircraft guidance systems.

## LATITUDE & LONGITUDE (CONT.)


Latitude runs east-west around the globe starting with 0 degrees at the equator. Longitude runs north and south from pole to pole around the globe starting with 0 degrees, the Prime Meridian in England.

- Degrees, Minutes, and Seconds:
  - Lat N45° 30' 30" by Long W118 ° 45' 30"
- Degrees, Minutes, and .100 minute:
  - Lat N45° 30.500' X Long W118° 45.500'

## LATITUDE & LONGITUDE (CONT.)

**Latitude & Longitude (Cont.)**

- Common datums
  - NAD 27 (North American Datum 1927)
  - NAD 83 (North American Datum 1983)
  - WGS 84 (World Geodetic System 1984)
- Most USGS 7 1/2' quads use NAD 27.
- Most aircraft guidance systems use WGS 84.
- Specify which datums to use on the incident so all GPS units are set the same.



Visual 5.41

## LATITUDE & LONGITUDE (CONT.)


There are several different datums. As the Situation Unit Leader, you need to be familiar with each so that if someone brings you a latitude or longitude coordinate you will be able to identify which it is. It is a good idea to inform the IMT of the datum you intend to use throughout the incident. Most USGS 7 1/2' quads use NAD 27. Most aircraft and most GPS units default to WGS 84.

If a latitude or longitude is brought to you and is different from what you are using, you can correct it as long as you know what it is. It is always important to ask.

Electronic devices default to WGS 84. If you want to take readings from a GPS device and place them on a topographic map, you need to set the GPS unit to North American Datum (NAD) 27 or NAD 83.

**Latitude & Longitude (Cont.)**

- Location Descriptions:
  - Degrees, Minutes & Seconds
    - Lat N 37° 52' 30" x Long W 121° 52' 59"
    - GPS setting: dd mm ss
  - Degrees, decimal minutes (100th of a minute)
    - Lat N(+) 37° 52.500' x Long(-) W 121° 52.983'
    - GPS setting: dd mm.mmm
  - Degrees, decimal degree
    - Lat N(+) 37.87500° x Long W(-) 121.88305°
    - GPS setting: dd.ddddd



Visual 5.42

## LATITUDE & LONGITUDE (CONT.)


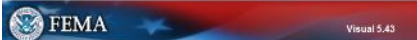
There are several ways to describe latitude and longitude (degree, 0–60 minutes, 0–60 seconds).

When aircraft guidance systems were developed they went to digital, so they were broken down to 100ths of a minute.

It is critical that you use common and consistent terminology at your incident. Ensure everyone is aware of the terms.

**Latitude & Longitude (Cont.)**

Note the identical numerical sequence but depending on how you read it you'll end up in different places!


Visual 5.43

## LATITUDE & LONGITUDE (CONT.)

The reason there are two different points (stars) is because there were two different datum. Inaccurate datum leads to incorrectly plotting points on your map.

**Latitude & Longitude (Cont.)**



- Used in navigation systems
- Does not equal uniform ground measurements.
  - DATUM USGS Topo use NAD 27 CONUS.
- Used for global positioning.
- Large scale grids on maps.
  - 7½ min Topographic Quads have 2½ min Lat/Long map "tics" along margins and interior of map.
  - Each corner of the Topographic map has full Lat/Long reference.
  - Topographic aid tools can be used to grid map into degrees and minutes.



Visual 5.44

**LATITUDE & LONGITUDE (CONT.)**

**Example of Latitude and Longitude**






Visual 5.45

**EXAMPLE OF LATITUDE AND LONGITUDE**

The image provides an example of latitude and longitude.

**Reading Topographic Maps**

- Every 5th contour line is an index line.
  - Heavier line 
  - Has elevation printed along it.
- To determine contour interval.
  - Find adjacent index lines.
  - Subtract and divide by 5.



Visual 5.46

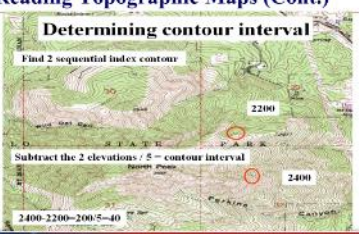

**READING TOPOGRAPHIC MAPS**

Every fifth contour line is an elevation (index) line. It is a heavier line and has elevation printed along it. The contour interval is the distance between elevation (index) lines.

To determine the contour interval, find two adjacent index lines, subtract them from each other, and divide by five.

**Reading Topographic Maps (Cont.)**

**Determining contour interval**


Visual 5.47

**READING TOPOGRAPHIC MAPS (CONT.)**

**Reading Topographic Maps (Cont.)**

- Supplementary contour lines are dashed.
- Areas on same contour line are equal in elevation.
- U or V shapes pointed up hill are drainages.
- U or V shapes pointed down hill are ridges.

Handout 5-2 Topography Quiz



Visual 5.48



Visual 5.49

**READING TOPOGRAPHIC MAPS (CONT.)**

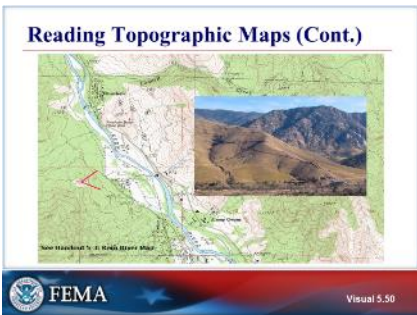
Supplementary contour lines are dashed. Areas on the same contour are equal in elevation. U or V shapes pointed up hill are drainages. U or V shapes pointed downhill are ridges.

U shapes are wider ridges or drainages than V shapes. Contour lines encircling an area are mountain tops. The closer contour lines are the steeper the slope. Saddles are represented by contour lines encircling two peaks.

Refer to Handout 5-3 Terrain Features. Identifying landmarks:

- Shape
  - 
  - 
  - 
  - 
  - 
  - 
  -
- Orientation
- Size
- Elevation
- Slope

**Reading Topographic Maps (Cont.)**



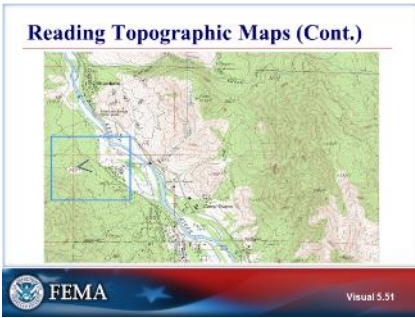
Visual 5.50

**READING TOPOGRAPHIC MAPS (CONT.)**

Refer to Handout 5-4: Kern River Map.

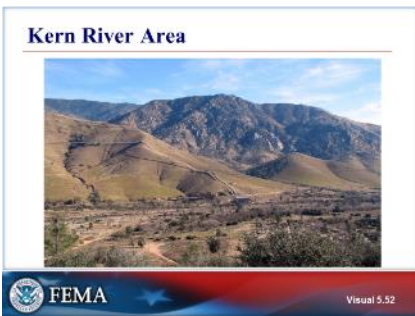
Darker (green) areas indicate heavier vegetation and lighter (white) areas indicate less vegetation.





Visual 5.51

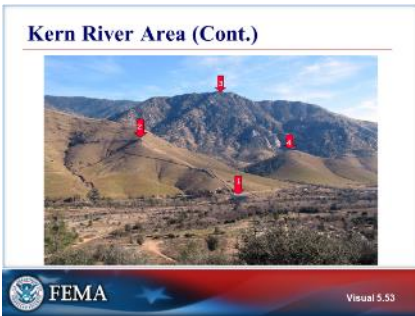
**READING TOPOGRAPHIC MAPS (CONT.)**



Visual 5.52

**KERN RIVER AREA**

The picture represents what the student would be able to see from the peak. Establish that the student is seeing the river in the foreground, to the east of their position.



Visual 5.53

**KERN RIVER AREA (CONT.)**




Visual 5.54

**KERN RIVER AREA (CONT.)**

**US National Grid**

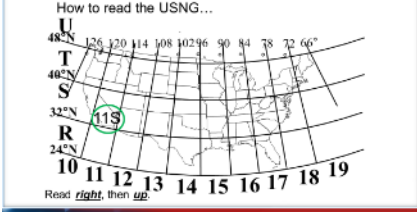
- FEMA Disaster Mapping Standard.
- Based on Universal Transvers Mercator (UTM) & Military Grid Reference System (MGRS).
- Provides a *unique* single point addressing system.
- No confusion with decimal points like Lat/Long.
- Used to create map books during disasters.




Visual 5.55

**UTM/USNG Grid Zone Destinations**

How to read the USNG...

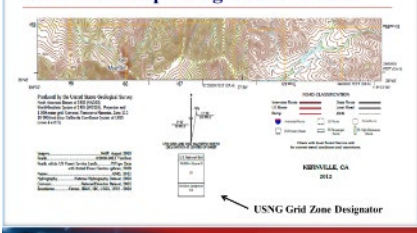


Read *right*, then *up*.




Visual 5.56

**Kernville Map Margin Information**



USNG Grid Zone Designator



Visual 5.57

## US NATIONAL GRID

FEMA Directive 092-5 outlines that FEMA will use the United States National Grid (USNG) as its standard geographic reference system for land-based operations and will encourage use of the USNG among whole community partners. FEMA Urban Search & Rescue Task Forces routinely use this for their missions. Minnesota, North Carolina, and Florida have adopted the USNG as their state mapping standard.

Two articles in Pre-work: “USNG Read Right, Then Up” and “One Grid to Rule Them All”.

## UTM/USNG GRID ZONE DESIGNATIONS

The world is further broken down into 8° bands of latitude. Combined with UTM Grid Zones, these 8° latitude by 6° longitude blocks are known as Grid Zone Designations. (Note, the USGS does not portray the latitude letter designation.)

In the northern hemisphere, these start with the letter N at the equator and proceed consecutively northward in 8° increments (with the omission of the letter O).

MGRS Grid Zone Designation 18S ranges from 32°N to 40°N and 72°W to 78° W.

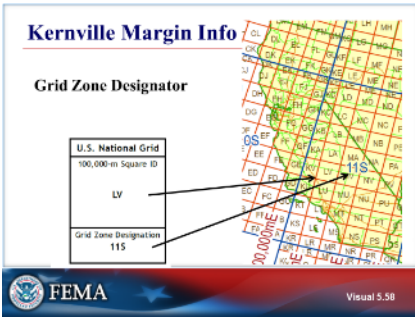
Washington, DC is in UTM/MGRS Grid Zone Designation 18S.

The 11S with the green circle is the location of the Kern River Topo Quad activity.

## KERNVILLE MAP MARGIN INFORMATION

This image shows the left and right sides of the Kernville 7 1/2-minute quadrangle map margin.

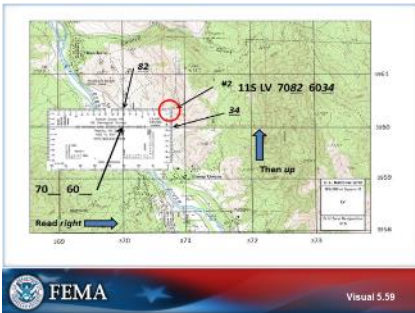
The emphasis is on where the USNG Grid Zone Designator is located on the margin. The vertical black line is the where the two sides of the map margin have been spliced together.



Visual 5.58

**KERNVILLE MARGIN INFO**

This visual shows how to use the USNG Grid Zone designator, from the bottom of the Kernville USGS 7 1/2 minute quadrangle map, to locate the map area in the context of how the USNG is overlaid onto the United States map.



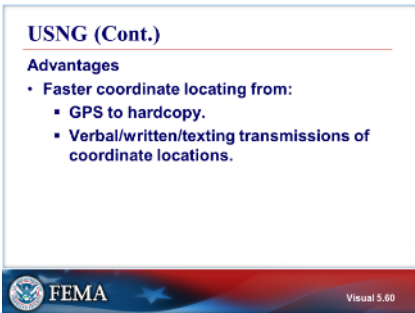
Visual 5.59

This visual illustrates the use of the Romer Scale to locate Photo Point #2 from the Topo Map reading visuals.

Note that it is an illustration, as the actual USNG address may be different from the graphic design in the visual.

“Read right, Then up”. First getting the grid intersection of 70 & 60; the second part is to use the Romer Scale to determine the remaining distances “82” and “34”.

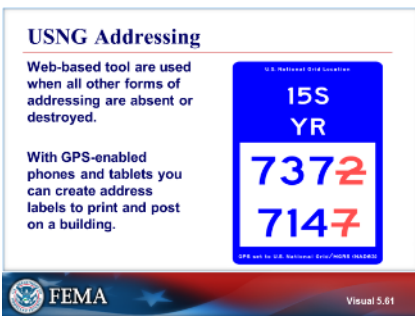
This completes the address sequence of 11S LV 7082 x 6034.



Visual 5.60

**USNG (CONT.)**

USNG is a much easier grid locating system than the Latitude/Longitude grid that has been used for a long time.



Visual 5.61

**USNG ADDRESSING**


This image is a screen shot of a USNG address label created from the website: <https://usngapp.org/>

Providing you have internet access, it can be used in the field to create address labels in areas that do not have any addressing system or have been destroyed by the disaster.



**Making the Maps (Cont.)**

- Situation Unit Map (Handout 5-6)
- IAP Map (Handout 5-7)
- Planning Meeting and Operational Briefing Sketch Maps




Visual 5.65

**Neatness**

Why is neatness important?


- More accurate.
- Easier to read.
- Easier to use in the field.
- Sloppy maps tend to be discredited.



Visual 5.66

**Accuracy**

- Strive for perfection.
- Major decisions may be based on your maps.
- Peoples lives may depend on your line placement.
- Do not make up information.
- Attempt to verify sketchy information.
- Consider the source.



Visual 5.67

## MAKING THE MAPS (CONT.)

Refer to Handouts 5-6 and 5-7 to follow along in preparing a Situation Unit Map, an IAP Map, and the Planning Meeting and Operational Briefing Sketch Maps.

Put thought into your maps. Think carefully about the base map you choose and how your maps will help meet the operational need.

One of your challenges is to clearly place detailed information onto a map that is small enough to be easily reproduced. (Smaller than 1:24,000 scale is too small.)

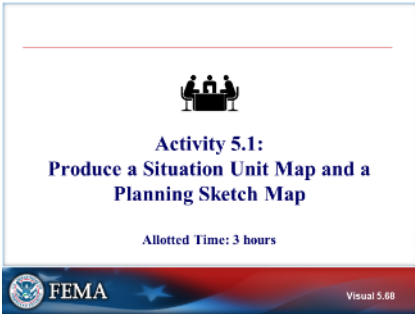
Ensure that your map is functional, and don't shy away from asking for a second opinion.

## NEATNESS

## ACCURACY

Website: <http://www.nwccg.gov>

Click the Publications tab and search for the Basic Land Navigation (PMS #475).

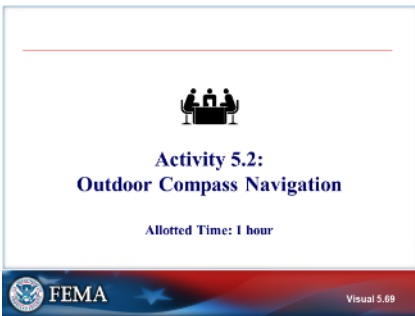


Visual 5.68

## ACTIVITY 5.1: PRODUCE A SITUATION UNIT MAP AND A PLANNING SKETCH MAP

The instructor will explain Activity 5.1.

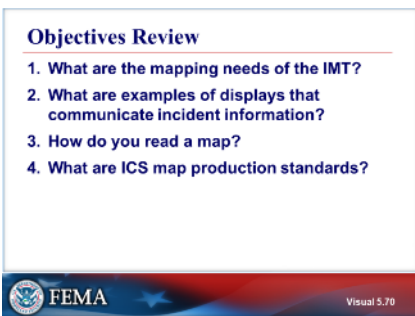
You will have a little over 2 hours to complete the activity and then 45 minutes of discussion and debrief.



Visual 5.69

## ACTIVITY 5.2: OUTDOOR COMPASS NAVIGATION (OPTIONAL)

As Activity 5.2 is an optional activity, depending on time, the instructor may or may not decide to incorporate into the instruction.



Visual 5.70

## OBJECTIVES REVIEW

### Unit Enabling Objectives

- Identify the mapping needs of the IMT.
- Describe display options that will communicate incident information.
- Demonstrate the ability to read maps.
- Demonstrate the production of maps to ICS standards.

## **Supplemental Materials**













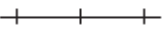

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## Handout 5-1: USGS Topo Map Symbols

The following is an abbreviated representation of some common USGS Topographical Map Symbols. It is recommended that students refer also to the full list of USGS Topographical Map Symbols. The full, in color list of USGS Topographical Map Symbols can be downloaded as a 4 page report from

<https://pubs.usgs.gov/gip/TopographicMapSymbols/>

SYMBOL	SYMBOL NAME	SYMBOL TYPE	SYMBOL COLOR
	State or Territorial Boundary	Boundaries	Black
	County or equivalent boundary	Boundaries	Black
	Building	Buildings and Related Features	Black
	School	Buildings and Related Features	Black
	Airport, paved landing strip	Buildings and Related Features	Black
	Campground	Buildings and Related Features	Black
	Depth Curve; sounding	Coastal Features	Blue
	Seawall	Coastal Features	Blue
	Index Contour	Topographic Contours	Brown
	Intermediate Contour	Topographic Contours	Brown
	Depression	Topographic Contours	Brown
	Cut	Topographic Contours	Brown
	Standard gauge railroad, single track	Railroads and Related Features	Black
	Railroad underpass; overpass	Railroads and Related Features	Black

SYMBOL	SYMBOL NAME	SYMBOL TYPE	SYMBOL COLOR
	Perennial stream	Rivers, Lakes and Canals	Blue
	Perennial river	Rivers, Lakes and Canals	Blue
	Perennial lake/pond	Rivers, Lakes and Canals	Blue
	Masonry Dam	Rivers, Lakes and Canals	Black
	Marsh or swamp	Submerged Areas and Bogs	Blue
	Quarry or open pit mine	Mines and Caves	Black
	Mine shaft	Mines and Caves	Black
	Primary highway	Roads and Related Features	Red
	Light duty road	Roads and Related Features	Black
	Sand or mud	Surface Features	Brown
	Power transmission line	Transmission Lines and Pipelines	Black
	Woodland	Vegetation	Green
	Orchard	Vegetation	Green

### Handout 5-2: Topography Quiz

Match the profile (A-F) with the contour lines (1-6)



1



2



3



4



5



6



A



B



C



D



E



F

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

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## Handout 5-3: Terrain Features

### Major Terrain Features:

**Hill**—An area of high ground. From a hilltop, the ground slopes down in all directions. A hill is shown on a map by topographic lines forming concentric circles. The inside of the smallest closed circle is the hilltop.

**Valley**—Usually formed by streams or rivers, a valley begins with high ground on three sides and low ground on the other. Topographic lines forming a valley are either U-shaped or V-shaped. The closed end of the contour line (U or V) always points upstream or toward high ground.

**Saddle**—A dip or low point between two areas of higher ground. If you are in a saddle, there is high ground in two opposite directions and lower ground in the other two directions. A saddle's topographic lines will resemble an hourglass.

**Ridge**—A sloping line of high ground. If you are standing on the centerline of a ridge, you will have low ground in three directions and high ground in one direction. Topographic lines forming a ridge tend to be U-shaped or V-shaped. The closed end of the line points away from high ground.

The description of these features forms a clear progression:

Number of Sides Surrounded by Low Ground

	1	2	3	4
Hill				X
Ridge			X	
Saddle		X		
Valley	X			

### Minor Terrain Features:

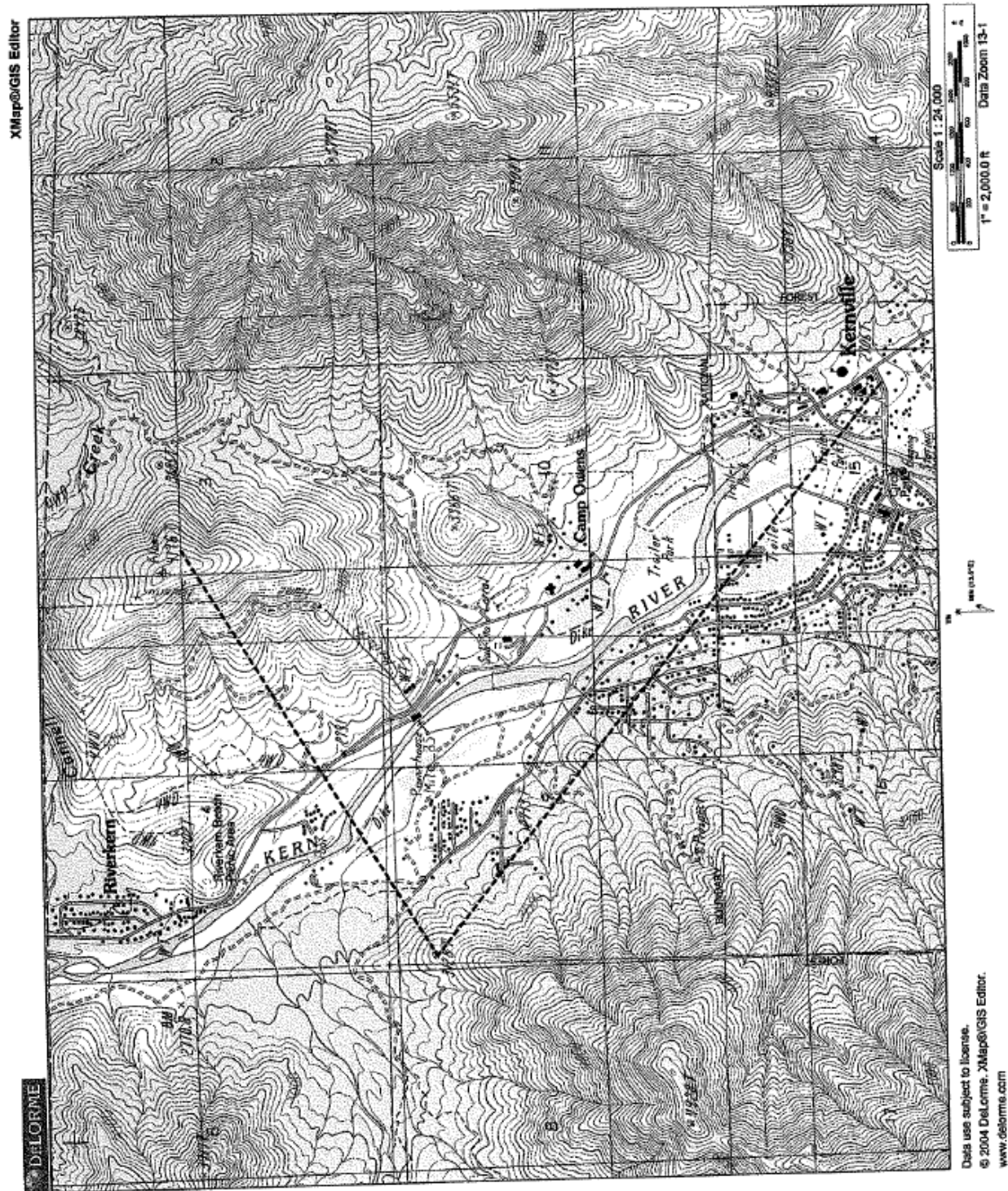
**Cliff**—A vertical or near-vertical change in elevation. Topographic lines will appear to converge on the map.

**Spur**—A short, continuous sloping line of higher ground, normally jutting out from the side of a ridge. The ground is sloped down in three directions and up in one direction. Contour lines on a map depict a spur with the U or V pointing away from high ground.

**Draw**—A smaller, rougher, less-developed valley. The ground slopes upward in three directions and downward in the other direction. Contour lines depicting a draw are U-shaped or V-shaped, pointing toward high ground.

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# Handout 5-4: Kern River Map




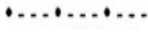
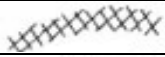
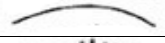
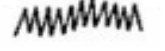



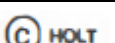
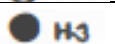








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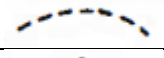
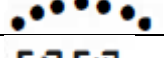
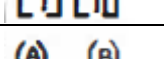
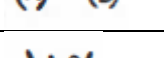
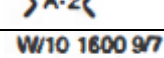
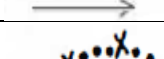
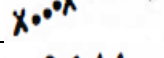
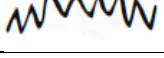
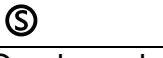
## Handout 5-5: ICS and Coast Guard Map Symbols

### ICS Map Symbols

#### SUGGESTED SYMBOLS FOR PLACEMENT ON A BASE MAP

Map Symbol	Symbol Description	Symbol Color
	Ridge	Black
	Manmade Features	Black
	Completed Dozer Line	Black
	Completed Line	Black
	Line Break Completed	Black
	Fire Origin or Hazard (Identify type of hazard – power lines, etc...)	Red
	Incident Command Post	Blue
	Incident Base	Blue
	Camp (Identify by name)	Blue
	Helispot (Include location and number)	Blue
	Helibase	Blue
	Repeater/ Mobile Relay	Blue
	Telephone	Blue
	Fire Station	Blue
	Water Source (Identify type -pond, cistern, hydrant, etc...)	Blue
	Mobile Weather Unit	Blue
	IR Downlink	Blue
	First Aid Station	Blue
















**SUGGESTED SYMBOLS FOR PLACEMENT ON OVERLAYS**







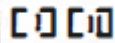






Map Symbol	Symbol Description	Symbol Color
	Uncontrolled Fire Edge (Identify date and time)	Red
	Spot Fire (Identify date and time)	Red
	Hot Spot (Identify date and time)	Red
	Fire Spread Prediction (Identify date and time)	Orange
	Planned Fire Line	Black
	Planned Secondary Line	Black
	Branches (Initially numbered clockwise from fire origin)	Black
	Divisions (Initially lettered clockwise from fire origin)	Black
	Segments (Combine division letter with clockwise numbering within the division)	Black
	Wind Speed and Direction	Black
	Proposed Dozer Line	Black
	Fire Break (Planned or Incomplete)	Black
	Staging Area (identify by name)	Blue

Overlays should include registration marks to enable the overlay to be positioned correctly on the map. These registration marks may consist of identified road intersections, township/ range coordinates, map corners, etc.

## Coast Guard Map Symbols

### ICS MAP/CHART DISPLAY SYMBOLOGY

Map Symbol	Symbol Description	Symbol Color
	Proposed Boom	Black
	Completed Boom	Black
	Absorbent Material	Black
	Hazard Origin	Red
	Incident Command Post	Blue
	Incident Base	Blue
	Camp (Identify by Name)	Blue
	Staging Area (Identify by Name)	Blue
	Joint Information Center	Blue
	Helispot (Location and Number)	Blue
	Helibase	Blue
	Mobile Relay	Blue
	Police Station	Blue
	Telephone	Blue
	Fire Station	Blue

Map Symbol	Symbol Description	Symbol Color
	Mobile Weather Unit	Blue
	Emergency Operations Center	Blue
	First Aid Section	Blue
	Hospital	Blue
	Oil Spread Prediction	Orange
	Actual Oil or Chemical Plume	Black
	Branches (Initially numbered clockwise from Incident origin)	Black
	Divisions (Initially lettered clockwise from Incident origin)	Black
	Division Boundary	Black
	Branch Boundary	Black
	Wind Speed and Direction	Black
	Safety/Security Zone	Black
	Boat Ramp	Black

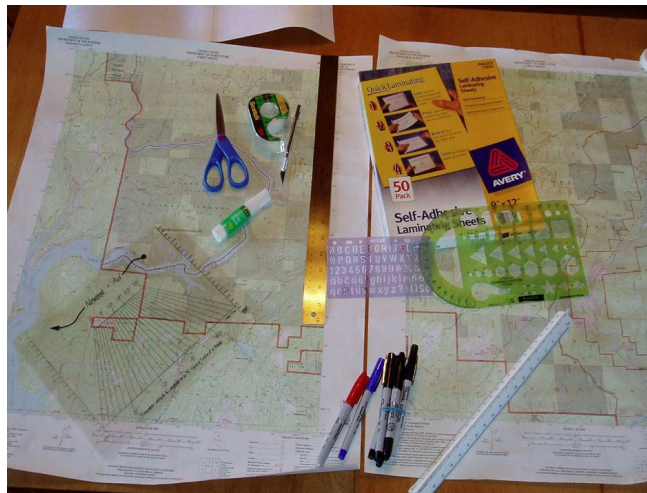
ICS Map/Chart Display Symbology is intended for used on incident briefing and Incident Action Plan maps and charts.

Overlays should include registration marks to enable the overlay to be positioned correctly on the map. These registration marks may consist of identified road intersections, township/ range coordinates, map corners, etc.

## Handout 5-6: Making the Situation Map

### Gather supplies.

- Base map
- Tape clear adhesive and painters tape
- Glue
- Exacto knife or scissors
- Metal ruler or engineers scale
- Templates
  - Lat/Long
  - UTM
  - Lettering/drawing
- Permanent marking pens
- White plastic erasers/alcohol
- Clear laminate film



**When multiple maps must be used, cut margin off one map on joining side.**



**Thoroughly coat margin of other map with glue.**



**Carefully match maps and glue map to margin.**



**Tape seam with clear adhesive tape on the front and back side.**







**Draw required elements on overlay using ultrafine permanent markers.**

- This map is viewed up close. Larger or wider markers tend to cover up information on the base map.
- Plot incident status with correct colors.
  - Mark confirmed information with permanent markers.
  - Keep wet erase pens handy for temporary notes or drawings and unconfirmed information.
  - Permanent markers can be erased with alcohol or white plastic erasers to correct or update.
- This map is the master map for the incident and should contain all confirmed information.



## Handout 5-7: Making the IAP Map

1. Acquire Base Map for the projected incident area.
2. If needed, cut, glue, and tape maps together to cover the entire incident.
3. Establish and cut out 10 ¼" x 16 ¼" pages from map.
  - Plan IAP map area carefully
  - Measure from sides of map to ensure IAP map is square

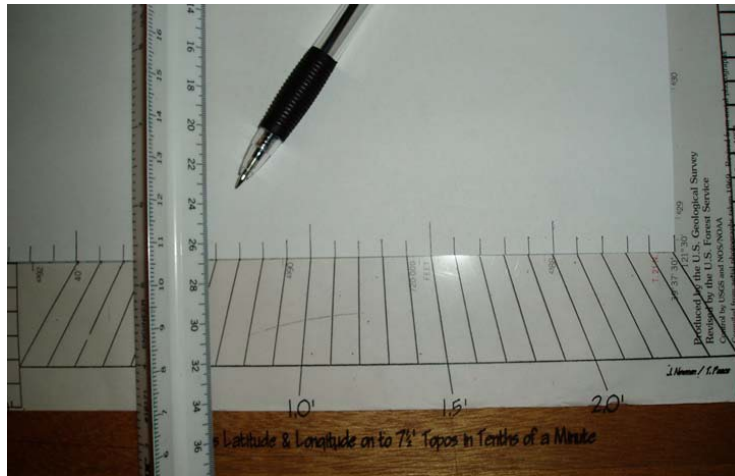


4. Glue cut-out map on 11" x 17" copy paper to allow a ½" border on the right and lower margin.





8. Place a blank piece of paper along edge of map and mark intersection of topo aid and edge of map to create a longitude ruler.
9. Repeat on one side of map to determine latitude grid.



10. Using lat/long ruler created on blank paper begin marking lat/long grid on margin starting at reference point drawn in margin.



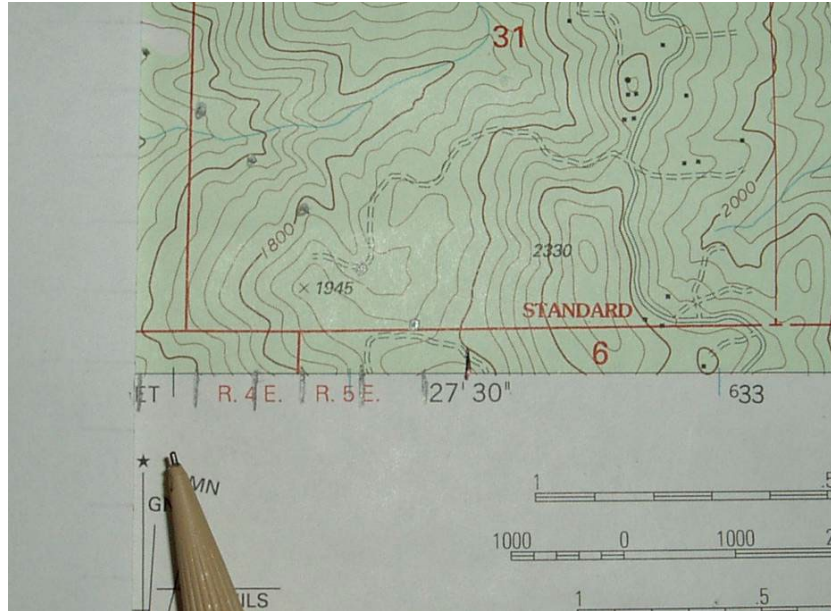
- 11. Mark every fifth or every whole or .5 minute .4 inches long and every 1/10-minute .2 inches long.**



- 12. Engineers rule can be used to determine lat/long grid. Use 30 scale on engineer's rule, and place 25th division on first lat/long mark on quad and 0 on map edge to divide into 25 tenths. Mark each 10 along rule.**



**13. Use a square or edge of sheet of paper to carry 1/10 mark to margin.**



**14. Laminate map with clear plastic laminate film.**



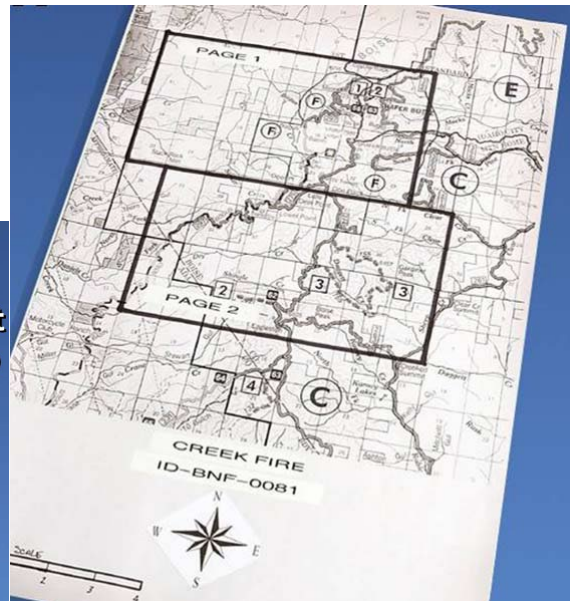
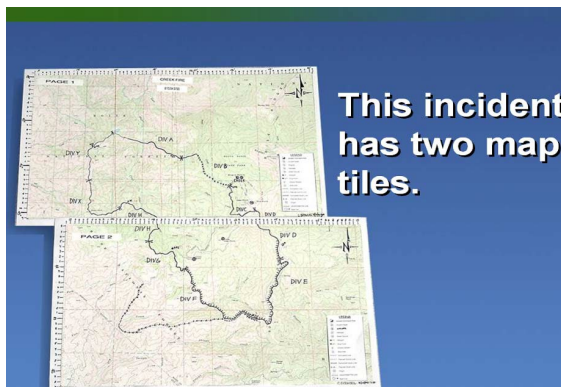
**15. Fine or ultra-fine point markers work well for plotting incident status on map. Use black marker if copying in black and white.**



**16. Make IAP copies from the laminated IAP Map.**

**17. When multiple pages cover an incident, make a master Index Map.**

**Pages can be taped together along margins to make a wall map.**



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## Activity 5.1: Instructor Directions for Situation Unit Maps

### MATERIALS:

- 6 Highway maps of Centralia, Marion County IL
- 6 (each) USGS 7.5' Topographic Quads for Centralia West, East, Irvington and Walnut Hill
- Ultra-Fine and permanent markers – blue, black, red, and green
- Mechanical pencils
- Plastic erasers
- Scale rulers
- Yard Sticks
- Glue sticks and rolls of clear tape and drafting tape
- Exacto knife or scissors
- Compass rings
- Drawing paper and lined paper
- Clear self-adhesive laminating sheets 9" x 12"
- 1 roll 36" Mylar clear film
- Map measuring wheels
- Romer Scales

### DIRECTIONS:

1. Distribute Centralia Area Topographic Quads and Highway Maps.
2. Have students prepare the base map for their Situation Unit Map as described in Handout 5-6: Making the Situation Map using the Centralia Topographic Quads. Alternatively, students can use the 4-tile map included in their Activity 5.1 packet.
3. Have students locate their Activity 5.1 packet and the three ICS Form 201s (Theater Incident, Burlington Incident, and Raccoon Incident) from Activity 4.1 in their Student Manuals.
4. Remind students that the prior scenario information is still valid.
5. Have students follow along while you read the following scenario injects.
6. Once the maps are assembled demonstrate how to use the Romer Scale to determine the USNG Coordinates of the three Incidents and the locations of the various Facilities listed below in the "Scenario Injects".
7. Additional USNG Injects should be created for additional "Incidents" that have occurred outside the initial 4 mile radius response boundary.

**Scenario Injects:**

- IC and Operations advises that their plan is to Branch the incident into three Branches: Theater Branch, Raccoon Branch, and Burlington Branch.
- A staging area will be established at Central City Lions Park @ 300 S. Morrison St & East Green.
- Helibase will be at Fairview Park 1110 West Broadway (Hwy 161).

8. Students should then plot the following points on their Situation Unit Maps.
  - Location of the three branches
  - Staging areas
  - Evacuation shelter
  - ICP
  - Evacuation parameter of ½ mile around the Burlington Branch
  - Helibase
  - Wind speed and direction
9. Give the students an opportunity to plot information on their own maps. Circulate throughout room to ensure each group identifies all of the above points for plotting.
10. Suggest that they write down any potential issues they see that may arise while they continue to plot information. Explain that once you start plotting information, you start to recognize potential problems. This is a critical aspect of the SITL's job.
11. Ask the students to be prepared to address the questions from the OSC that are identified on their Scenario Inject Sheet.

After students have completed their Situation Unit Maps, review with students to make sure their maps follow STAND(D). If not, have them enter any missing components.

## **Activity 5.1: Debrief Following Presentation of Situation Unit Maps**

Facilitate a short discussion using the following questions:

- Do we have any idea what are the chances of Dam failure and what areas would be flooded?
- What effect would the weather have on the incident?
- Does your Situation Unit Map indicate any other potential threats and what are the implications?

Responses should include:

- Theater Branch is right next to the ICP (danger of fire spreading to ICP)
- Crack in the Raccoon dam (Dam could fail and lead to flooding. Need to know what lies ahead of the dam that might be in danger and require evacuation.)
- Wind direction (effect on HAZMAT incident)

### **Activity 5.1: Instructor Directions for Sketch Map**

1. After students have completed the Situation Unit Map, ask them to prepare a Planning Meeting Sketch Map. This should highlight talking points that need to be discussed at the meeting.
2. Have student display their sketch maps. Have each group present their findings. Remind them to present as if they were giving a briefing.

### **Activity 5.1: Debrief Following Presentation of Sketch Maps**

- Discuss the focus of the SITL briefing (facts and information).
- Discuss the importance of making the map large enough for all to see and using proper color coding.
- Tell students it is helpful to do the map in pencil first to make sure of placement and then use markers to go over pencil lines

## Activity 5.1: Produce a Situation Unit Map and a Planning Sketch Map

# Produce a Situation Unit Map and a Planning Sketch Map

## Map

### Activity 5.1—Unit 5

#### Purpose

The purpose of this activity is to provide students with an opportunity to produce a Situation Unit Map and a planning sketch map using information from the scenario in Activities 3.1 and 4.1.

#### Objectives

Students will:

- Select and prepare the appropriate base map for creation of a Situation Unit Map.
- Appropriately display the relevant information on a Situation Unit Map.
- Ensure that STAND(D) is adhered to on the map, including proper symbology, etc.
- Using the Situation Unit Map, prepare a sketch briefing map for the Planning Meeting.
- Refer to the Situation Briefing Outline (Handout 8-4).
- Present a 2–3-minute situational overview at the Planning Meeting.

#### Activity Structure

This scenario-based activity is scheduled to last approximately 2 hours, including discussions and interactions, development of maps, and presentations of display maps. Students will review the previous scenario from Activities 3.1 and 4.1. Students are encouraged to use all available resources and technologies to develop the Situation Unit Map and Planning Sketch Map. Students will receive transportation maps and facilities maps. The instructor will briefly review the process for generating these maps. Groups will then present their Situation Unit Maps and Planning Meeting Sketch Maps to the full class, explaining how their products support the IMT.

#### Rules, Roles, and Responsibilities

Students will individually prepare standard ICS Situation Unit maps. **Following are the specific activities and instructions for your participation in the activity:**

1. Review the information provided. Given the information in the previous scenario and the supporting information, begin developing the assigned display maps.
2. Locate an area with enough space to display the maps to the entire class.

3. Present your maps to the full class as if you are presenting a briefing.

## Schedule

Activity Introduction and Overview	15 minutes	Classroom
Discussion/Documentation	2 hours	Individually
Debrief/Review	45 minutes	Classroom

## Activity 5.1

### Scenario Injects

IC and Operations advises that their plan is to Branch the incident into three branches: Theater Branch, Raccoon Branch, and Burlington Branch.  
 A staging area will be established at Central City Lions Park @ 300 S. Morrison St & East Green.  
 Helibase will be at Fairview Park, 1110 West Broadway (Hwy 161).  
 Students will determine the USNG Coordinates for the Injects above.

### Questions from OSC

Do we have any idea what are the chances of dam failure and what areas would be flooded?  
 What effect would the weather have on the incident?  
 Does your Situation Unit Map indicate any other potential threats and what are the implications?

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## Activity 5.1: Coordinate Systems Format Demonstration

### Demonstration Directions

Instructor completes #1 and #2 prior to the beginning the demonstration.  
Demo courtesy of Greg Shuping, Haywood County, NC Emergency Management.

1. Collect GPS coordinates, at or near the SITL course location, of one point-like a flag pole or other feature close to the classroom. Collect the coordinates to correspond to the different systems listed in 2 a-f.
2. On an easel pad write the coordinates in the following order, from top to bottom on the pad. Place a space where symbols and decimals should be, but do not place the symbols or the coordinate system name. (just the #s)
  - a. DD.DDDDD
  - b. DD MM.MMMM
  - c. DD MM SS.SSS
  - d. UTM/UPS
  - e. MGRS
  - f. USNG
3. Tell the class that each of the displayed formats represents the same exact location. Ask the class to help you to fill symbols in the appropriate location and define the name of each format.
4. Explain each coordinate system format from top to bottom. Use the notes from page 2, adding other pertinent information as needed. Make sure to add all symbols on coordinates and write down the coordinate system name before moving to the next format.
5. Students will be asked, in the Activity 5.1, to determine the USNG Coordinates of the 3 Centralia Incidents.
6. Students will also need the Romer Scales. A master Romer Scale Template, designed to be copied onto transparency film, follows this demo within the Activity 5.1 Supplemental Materials.

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**40.77154°      -73.91732° DD.DDDD**

- Cell Phones and many computer-based mapping systems generally use this format.
- Not designed to navigate on foot or by vehicle. **TOO MANY NUMBERS-14**

**40° 46.29228'      73° 55.0389'      DD MM.MMMM**

- Standard format for electronic navigation systems.
- Not designed to navigate on foot or by vehicle. **TOO MANY NUMBERS-17**

**40° 46' 17.5368"      73° 55' 2.334"      DD MM SS.SSSS**

- Common format used by helicopters.
- Not designed to navigate on foot or by vehicle. **TOO MANY NUMBERS-19**

**18N591370 4513960      UTM/UPS**

- Uses Longitude, but not latitude bands to create zones.
- The first attempt to use metric calculations to identify and measure between points.
- Still too difficult to understand. **TOO MANY NUMBERS-13**

**18TWL9317013960      MGRS**

- Derived from UTM/UPS and Lat/Long systems.
- Uses Lat and Long bands, then places squares inside them.
- 1 meter precision points can easily be identified. **ALL NUMBERS SQUASHED TOGETHER**
- Uses metric system to define 1 km squares, which can be sub-divided into 100m, 10m, and 1m square points.

**18T WL 9137 1396 USNG**

- Serves as the National Standard format for Incident Management Systems.
- Uses MGRS system, but added space between the Easting and Northing.
- Eliminates confusion by using less numbers to express the location.
- Once inside the GZD and 100km square, all you have to use are the 8 digits, which identifies a 10m square.

**91370 13960** *10 digits (1m square location)* -Building corner, power pole, Precise point

**9137 1396** *8 digits (10m square location)* -Victim, heli-spot, drop point, intersection

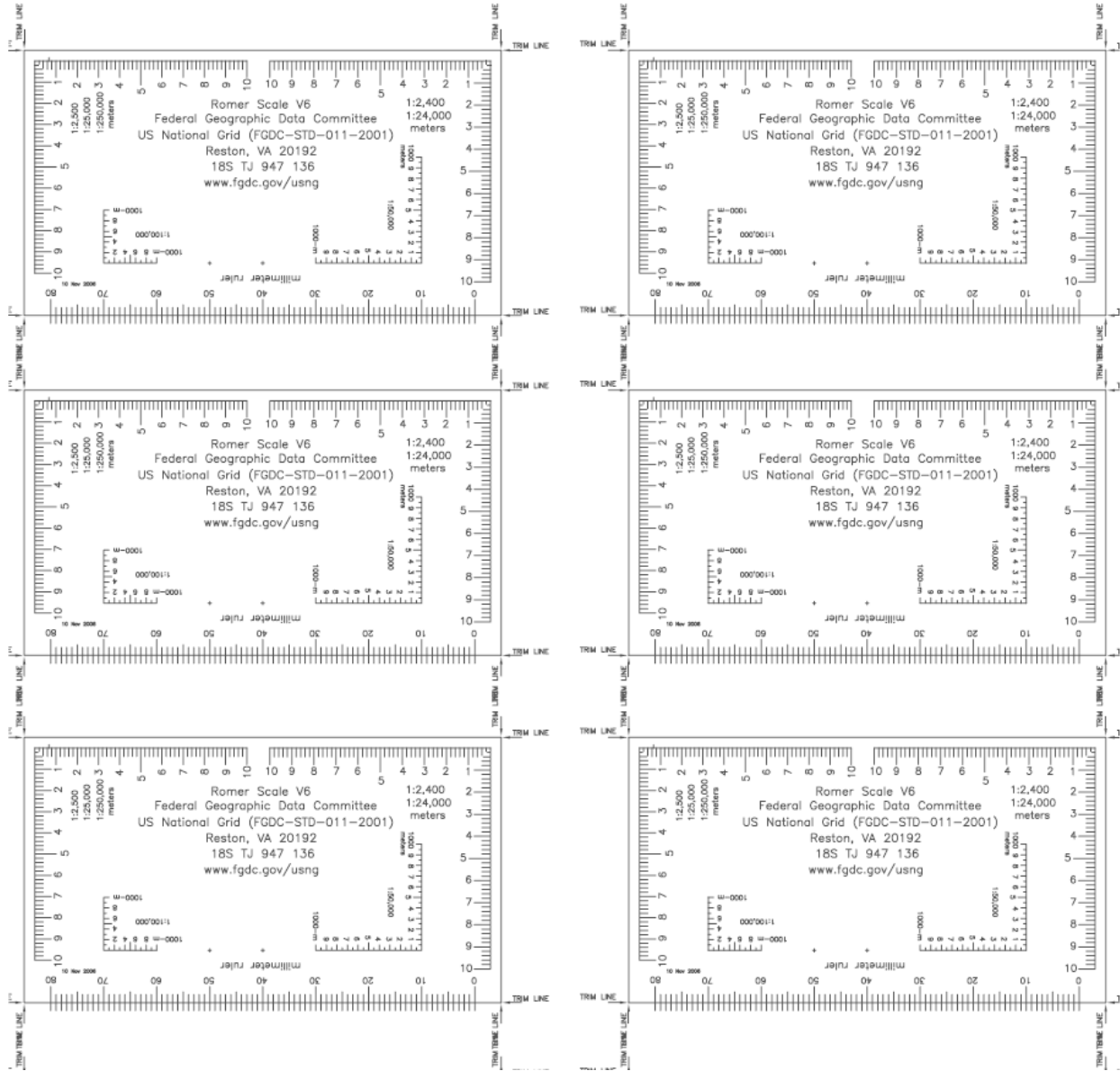
**913 139** *6 digits (100m square location)*-Building, airport, division

**91 13** *4 digits (1 km square location)* -Fixed-wing or Helicopter flight pattern

<b>18T</b>	<b>WL</b>	<b>9137</b>	<b>1396</b>
Grid Zone Designation (GZD)	100 km square	Easting	Northing

## Activity 5.1: Grid Reader Template (Romer Scale)

To determine the USNG coordinates students will need the Romer Scale. Below is a master template that can be copied onto transparency film and then cut out for the students to use. Print "Actual Size" and verify the scale is correct.



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**Spot Forecast for the Centralia Incident**

National Weather Service St. Louis MO.

430 PM PST April 21 \_\_\_\_\_

IF CONDITIONS BECOME UNREPRESENTATIVE,  
CONTACT THE NATIONAL WEATHER SERVICE.

DISCUSSION...WEAK COLD FRONT APPROACHING NORTHERN ILLINOIS WHICH IS EXPECTED TO MOVE ACROSS NORTHERN ILLINOIS TOMORROW BRINGING INCREASED CLOUDINESS AND A CHANCE OF RAIN WITH GUSTY AND SHIFTING WINDS

FOR THIS EVENING AND TONIGHT

WEATHER.....FAIR SKIES EARLY THIS EVENING WITH INCREASING CLOUDS AND WINDS LATE TONIGHT

TEMPERATURE.....TEMPERATURES DROPPING INTO THE 40S AFTER 1800

WITH MIN TEMPERATURES 34-38.

HUMIDITY.....HUMIDITY CLIMBING ABOVE 60% AFTER ABOUT 1800

WIND.....SWITCHING TO SE 4 TO 5 MPH AFTER 1800 TURNING TO NW 15-20 AFTER 0200

MIXING WINDS.....BECOMING SW 10-15 MPH AFTER 1800 TURNING TO NORTHWEST 20-30 BY 0200

OUTLOOK FOR TOMORROW

WEATHER.....CHANCE OF RAIN IN THE EARLY MORNING WITH CLEARING

AFTER 1000. CHANCE OF WETTING RAIN 30%

TEMPERATURE.....MAX 58-62.

HUMIDITY.....MIN 50-55%

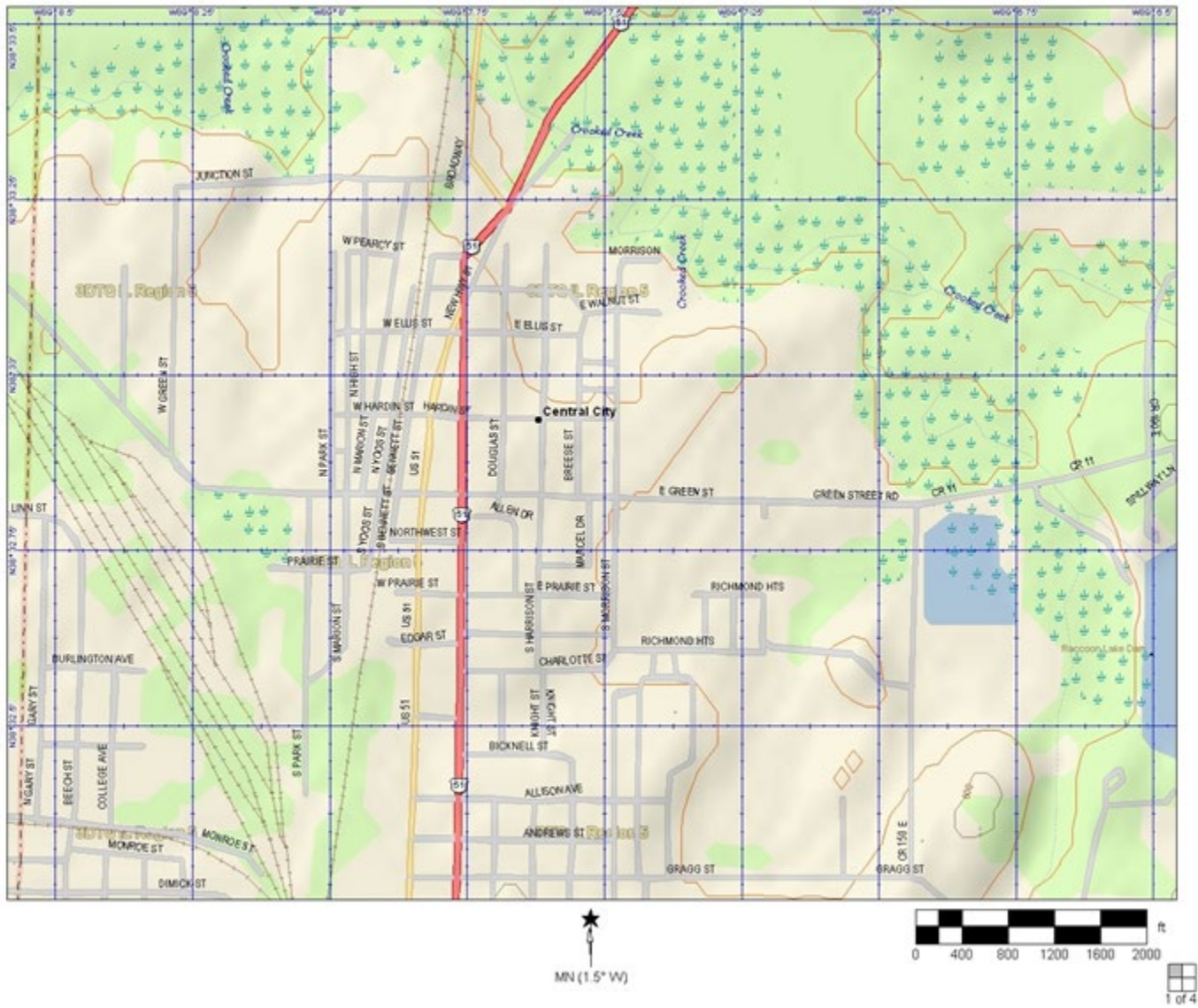
WIND...EYE LEVEL...GUSTY 10-20 NORTHWEST TURNING NORTH 4-5 AFTER ABOUT 1000.

MIXING HEIGHT.....6000 FEET AGL EARLY.

MIXING WINDS.....NORTHWEST 15-25 MPH TURNING TO NORTH 8-10 BY 1000

FORECASTER...SMITH

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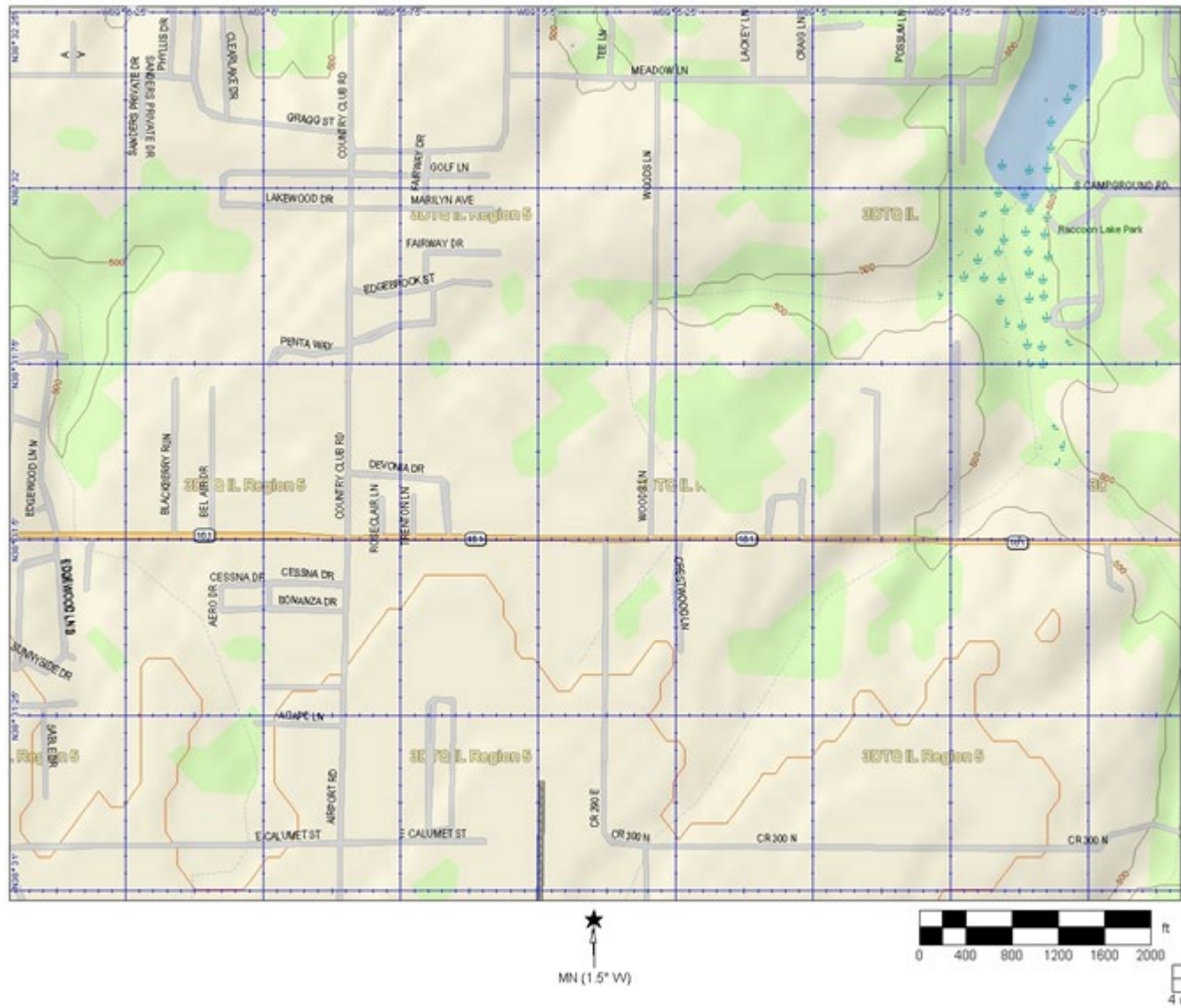




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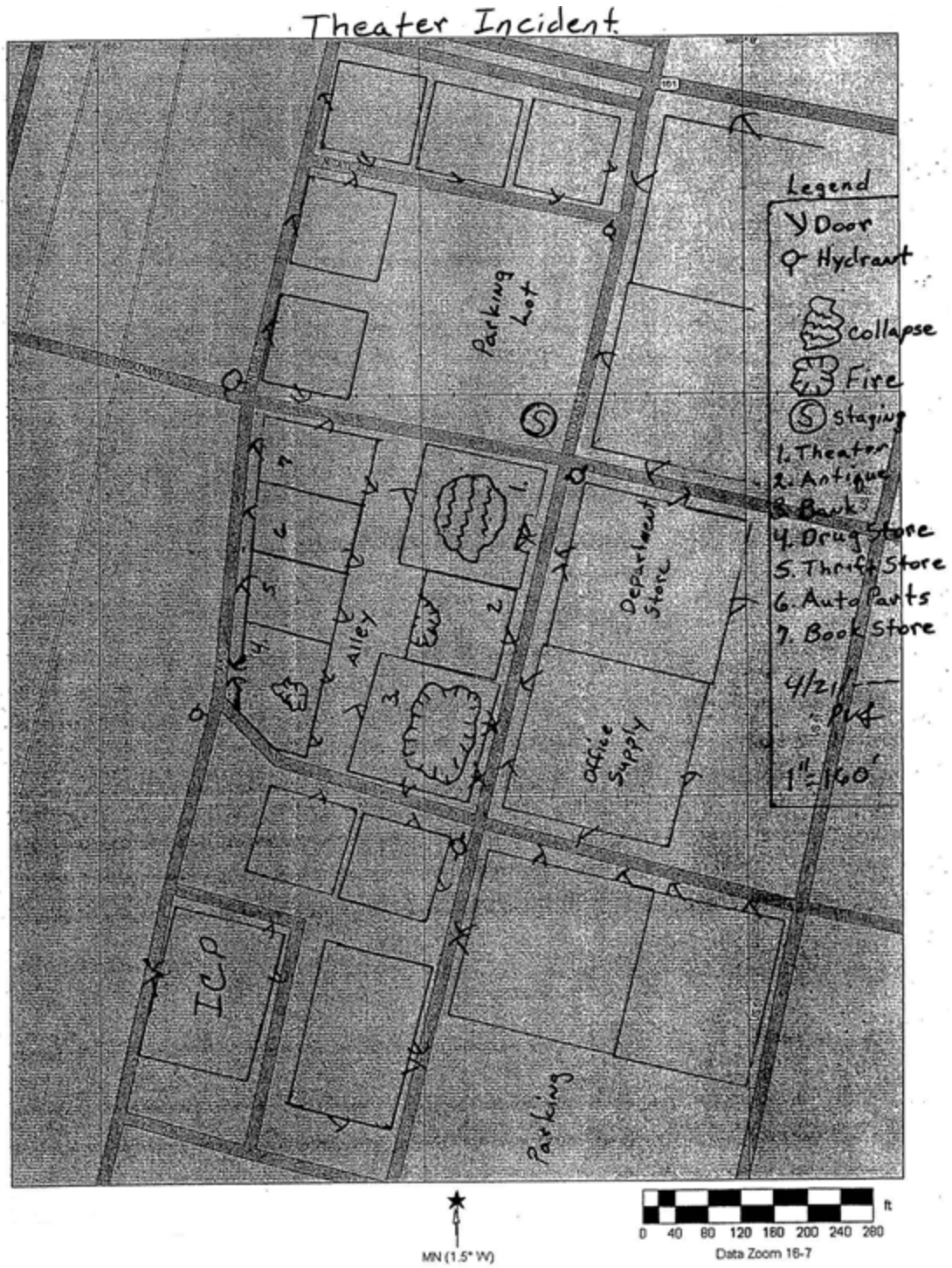


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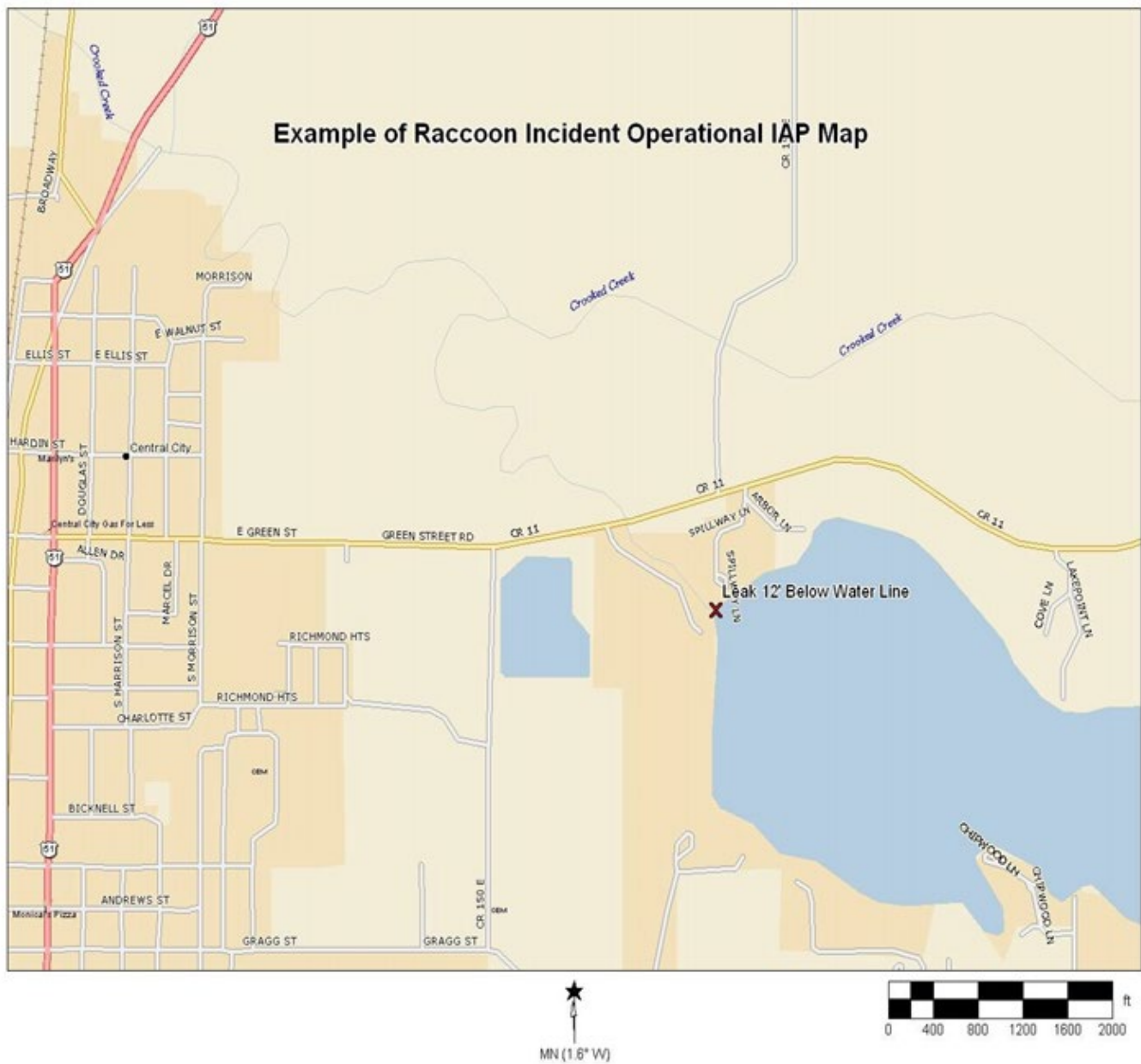




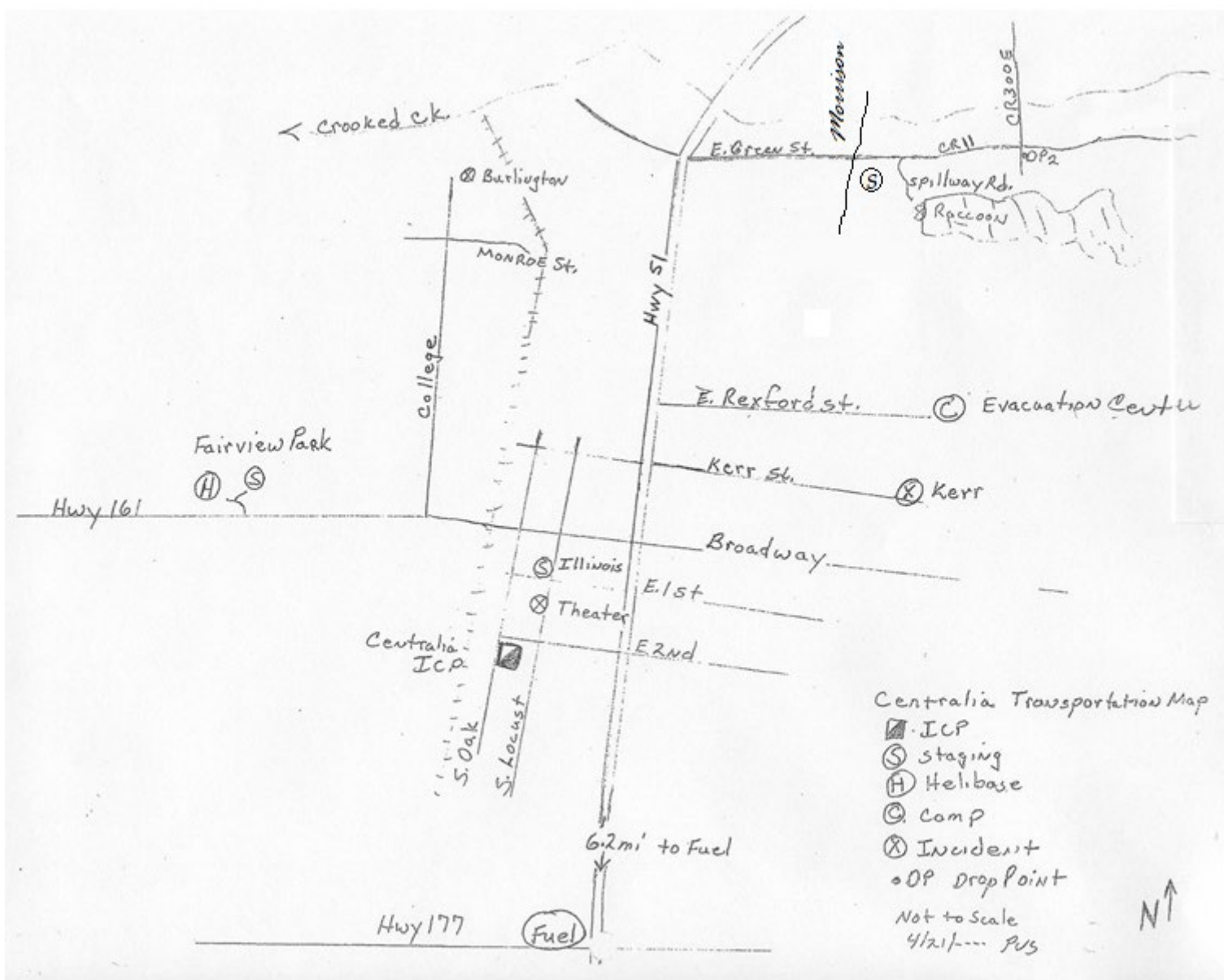
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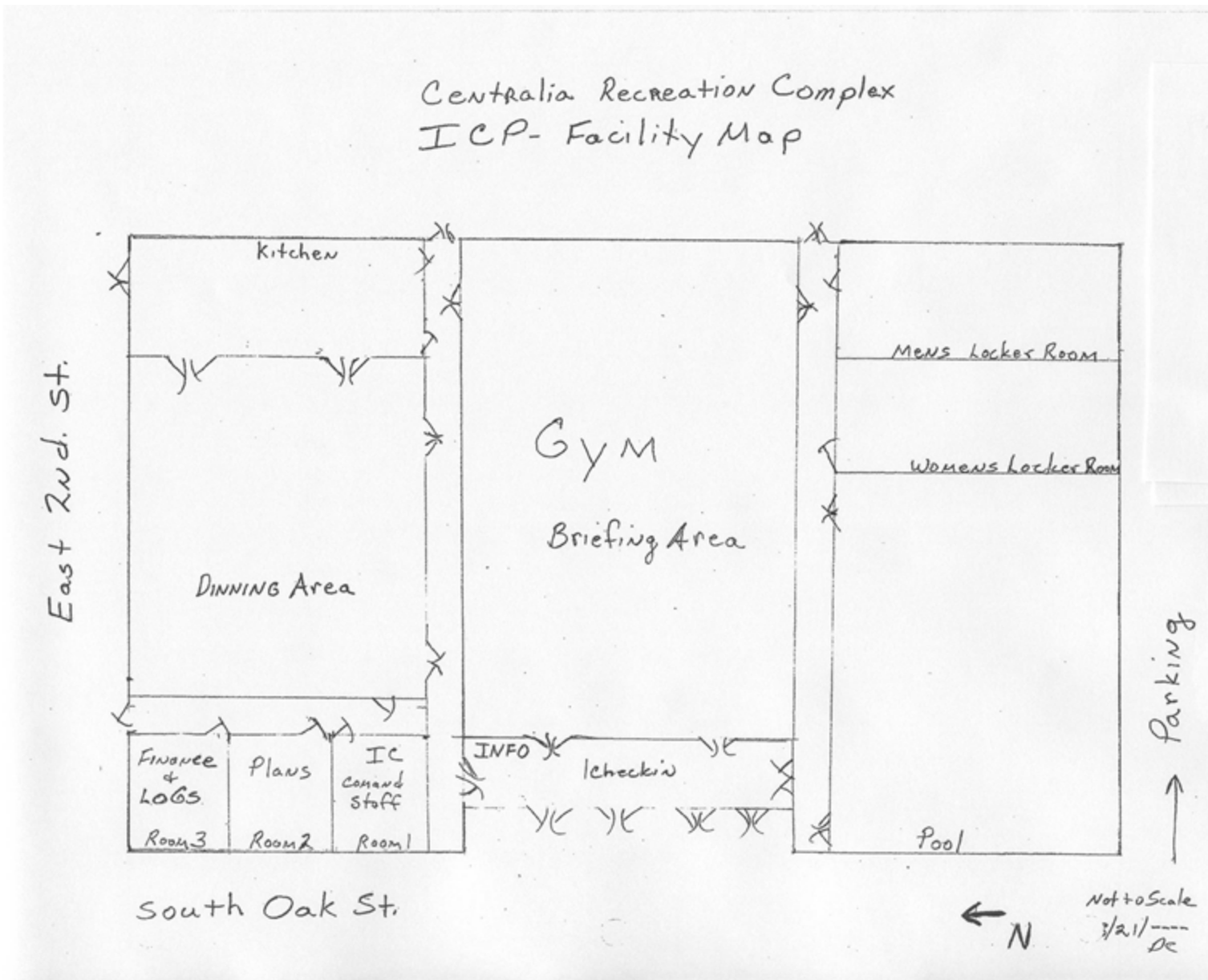


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### **Activity 5.2: Instructor Directions**

This optional activity can be used on the afternoon of the Day 3 or at the beginning of Day 4.

It could also be incorporated with the Unit 6 GPS Activity with some additional coordination.

Coordinate with the course host for permissions and transportation needs.

Set up a simple three or four (depending on class size) 6 segment compass courses outside the classroom or at a nearby park. (If you are teaching this class outside of your area utilize the internet to find the class location and look for nearby parks) You will need to set this up on Day 2 and print up the different courses that evening.

#### **Materials needed:**

Tape measure and traffic cones, or other markers, for the pacing of the 100 meters and 66-foot distances.

If you are going to teach the use of “Ranger” Pacing Beads, you’ll need to have those materials on hand as well. Do an internet search for instructions. You will need:

- 50 feet of parachute or other cord
- 1 pack of multi colored pony beads- Check Local Craft Stores
- Mini carabineers- check the bargain stores
- Compasses for each of the student groups (you can notify the students a few weeks in advance of the class to bring a compass and a GPS unit if they have one)

Clip boards for recording the answers to the Compass Course questions.

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## Outdoor Compass Navigation Activity 5.2 (Optional)—Unit 5

### Purpose

The purpose of this optional activity is to give the student's an opportunity to learn how to navigate with a compass.

### Objectives

Students will:

- Determine their "pace count" for a 100 meter and 66 foot (1 chain) distances.
- Be able adjust the compass for declination.
- Determine azimuth and pace distances along the compass course.

### Activity Structure

This activity is scheduled to last approximately 60 minutes.

1. Students will first determine their pace count over the set distances of 100 meters and 66 feet.
2. Students will be split up into groups of three or four depending on the number of compasses available.
3. Students will orientate their compass, determine azimuths, and follow that azimuth along a predetermined course set up by the instructors.

Following are the specific activities / instructions for the students in the activity:

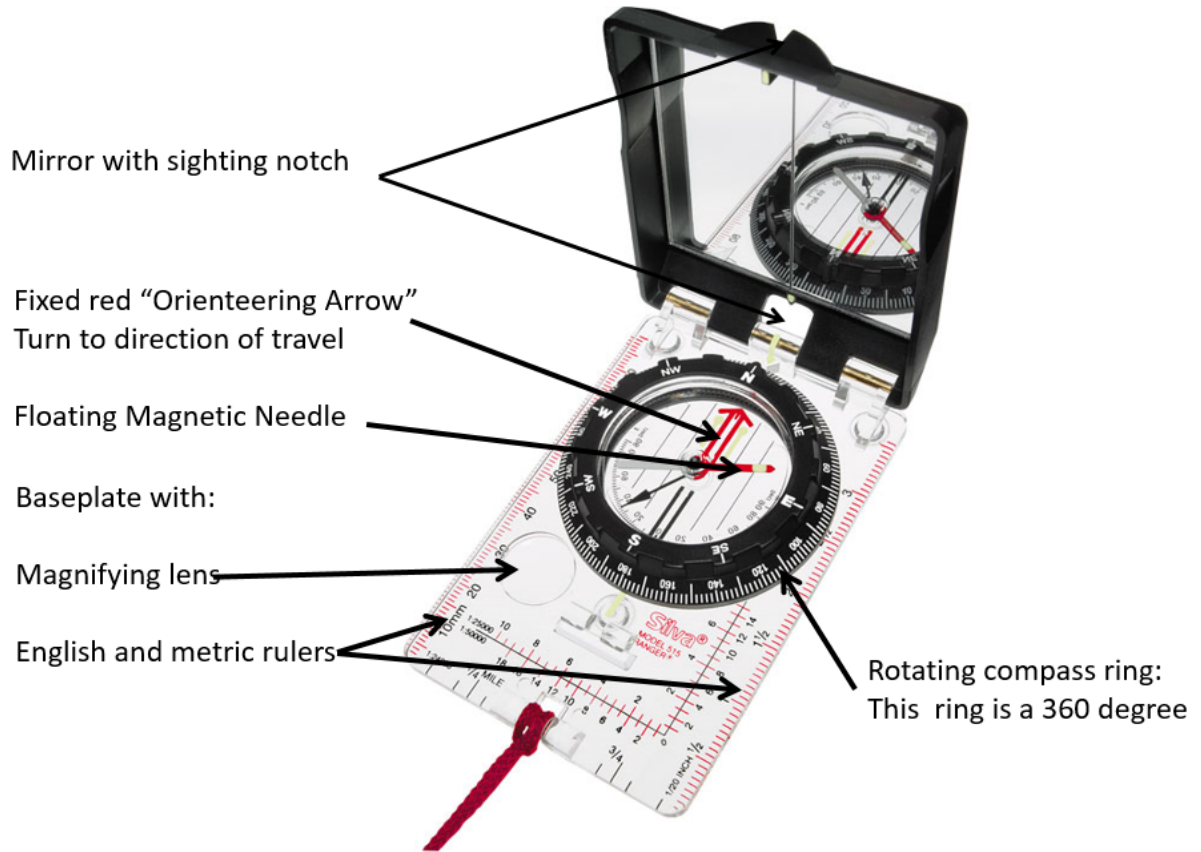
1. Instructor will demonstrate how to orientate their compasses and give an example of setting the azimuth for a predetermined object.
2. Students will be asked to determine the azimuth to a pre-determined point or object in the distance and document their answers for the compass course they are assigned.
3. Students will follow a compass bearing and pace the distance to the pre-determined points on the course.

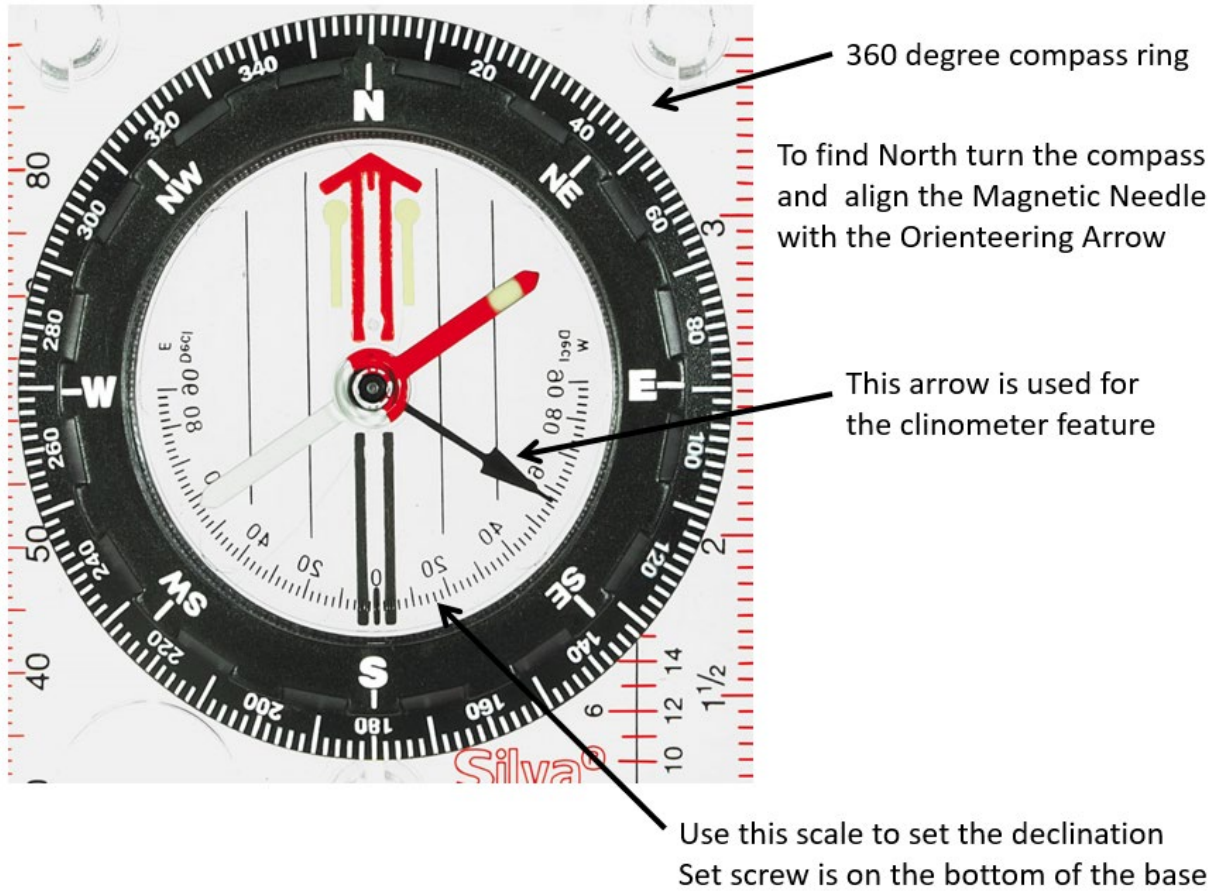
## Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	30 minutes	Classroom
Discussion/Documentation	40 minutes	Small Groups
Debrief/Review	10 minutes	Classroom
Transportation	30 minutes	To and from location

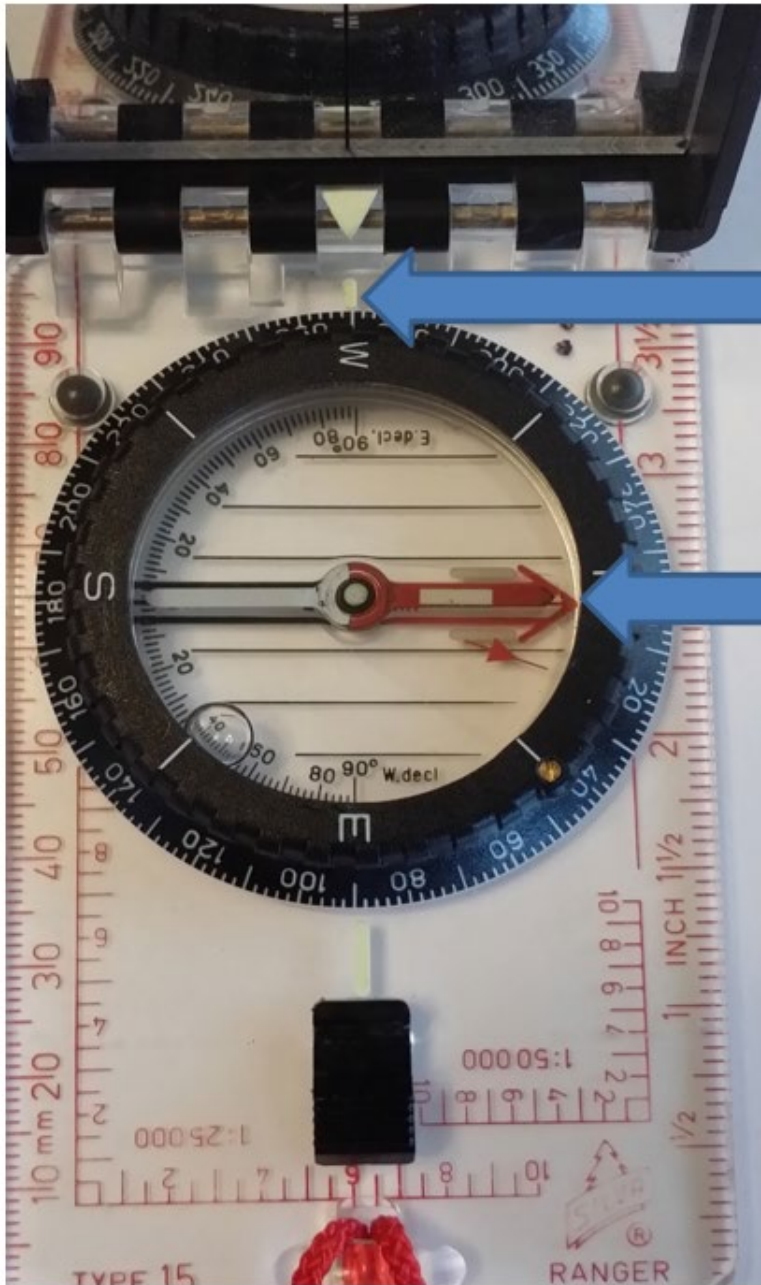
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## Activity 5.2: Compass Parts









Direction of travel is West or 270 degrees

Magnetic Arrow aligned with "Orienteering Arrow"

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# Unit 6: Advanced Display Processing

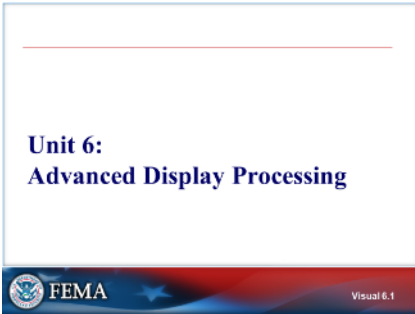
STUDENT MANUAL

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Visual 6.1

## UNIT 6: ADVANCED DISPLAY PROCESSING

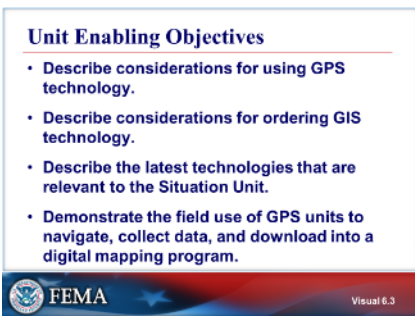
Through this unit, students will gain an understanding of GPS, GIS, and other recent technology used during incident response. The students will then participate in an activity where they use GPS technology.



Visual 6.2

### UNIT TERMINAL OBJECTIVE

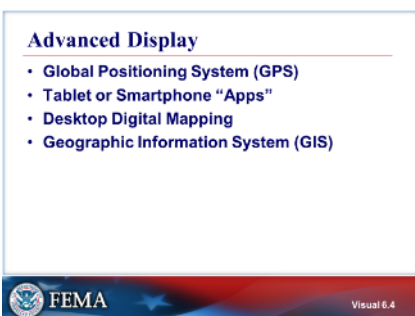
Demonstrate how to use advanced technology to develop and display incident information.



Visual 6.3

### UNIT ENABLING OBJECTIVES

- Describe considerations for using GPS technology.
- Describe considerations for ordering GIS technology.
- Describe the latest technologies that are relevant to the Situation Unit.
- Demonstrate the field use of GPS units to navigate, collect data, and download into a digital mapping program.



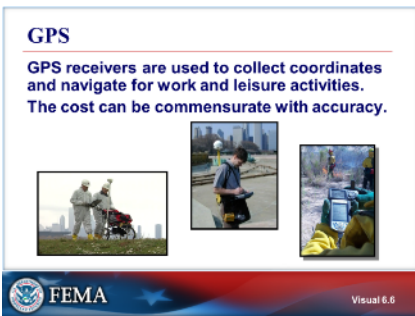
Visual 6.4

### ADVANCED DISPLAY

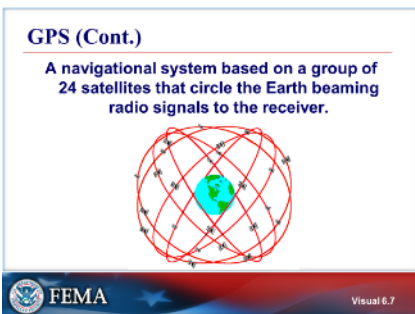
Advance display technologies used by the Situation Unit during incident response.



Visual 6.5



Visual 6.6



Visual 6.7

## GLOBAL POSITIONING SYSTEMS (GPS)

### GPS

There are differences in the types of GPS units and the type of accuracy that you need. The antenna affects the sensitivity of the unit. For example, when you get into crowded streets the more powerful antennas can make a big difference. The images on the visual show high-powered antennas.

To ensure accuracy when you use a GPS, plot the points on a map as well, as a backup if the GPS malfunctions or loses battery power.

### GPS (CONT.)


A GPS receiver is a small electronic device used to pick up signals from the satellites. The receiver uses the radio signals from at least three satellites to calculate its position (four are needed to calculate elevation). Its accuracy ranges from 20 meters to less than 1 foot.

It is best if the Field Observers bring their own GPS because they want to have a system they know how to operate. There are numerous brands and models. To ensure FOBS bring their own GPS, specify when ordering.

The more satellites the GPS can hit simultaneously the more accurate it is. Five to eight satellites is typical.

**GPS Tips**

- Needs radio signals from at least three satellites to calculate its position.
- Numerous position display formats available:
  - USNG, MGRS, Lat/Long.
- Position and elevation accuracy determined by number of satellite signals being received.
- Custom maps and symbols available for download.





Visual 6.8

**Infrastructure—GPS Aerial Operations**

Used to reference:

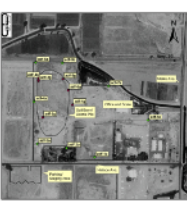

- Video mapping
- Visual observations
- Aerial photography

Visual 6.9

**GPS Uses**

- Displays location:
  - Allows communication to exact location
  - Aircraft use GPS guidance
- Records and finds locations
- Tracking logs (date/time stamp)
- Exact time check
- Elevation
- Sunrise and sunset
- Speed and bearing
- Waypoints

Visual 6.10

## GPS TIPS

GPS considerations and operation hints.

- To get a coordinate you must have at least three signals.
- Several position formats: USNG, MGRS, Lat/Long
- Position format and elevation accuracy determined by number of received signals.
- Can download custom maps and symbols.

## INFRASTRUCTURE – GPS AERIAL OPERATIONS

GPS aerial mapping can be used for video mapping, visual observations, and aerial photography. Aircraft generally use degree minutes and decimal minutes.

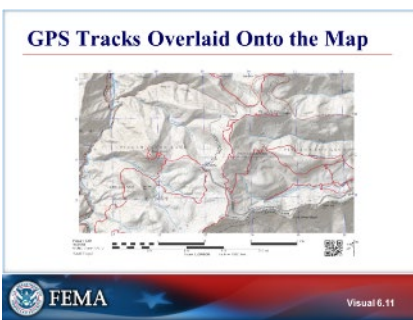
## GPS USES

The GPS has numerous uses in addition to being able to track waypoints. It can also:

- Display the location so when you turn it on you know where you are.
- Identify the latitude and longitude.
- Constantly correct as you move.
- Provide the exact time if you need to set watches on an incident.

This image on the visual is an example of a tracking log. It is extremely important that you have the correct data before you start tracking. You can change the datum after you take the reading if necessary, but converting data is complicated on some units, so it's best to ensure that everyone on your team is using the same datum before you take any readings.

Elevation on GPS is not very accurate since accuracy is directly related to the number of satellite signals being received by the GPS unit. If it is hitting less than 5 satellites, elevation accuracy can be more than 100 ft off. This is the least accurate reading to use.



Visual 6.11

## GPS TRACKS OVERLAID ONTO THE MAP

The image shows an example of how the GPS tracking looks when overlaid onto a map.

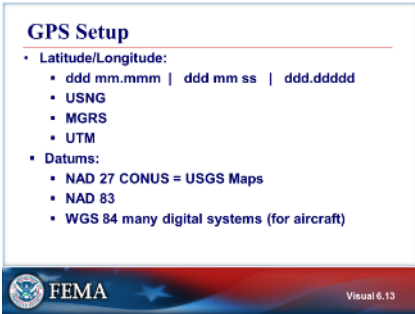


Visual 6.12

## GPS SCREENS

- 1 highlights the antenna.
- 2 highlights the keypad.
- 3 points to the power button.
- Status page.





Visual 6.13

## GPS SETUP

This visual shows the various navigation/position format grids that can be used in a GPS unit.

Latitude/Longitude has three different settings.

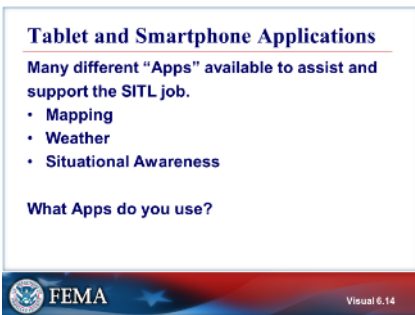
- ddd mm.mmm
- ddd mm ss
- ddd.ddddd
- USNG - US National Grid.
- MGRS - Military Grid Reference.
- UTM - Universal Transfer Mercator

Datums:

- NAD 27 CONUS: North American Datum 1927 Continental US.
- NAD 83: North American Datum 1983.
- WGS 84: World Geodetic System 1984 (GPS's work from this DATUM)

It is critical everyone on the incident is on the same position format and datum. Regardless of which position format is used it is important to that all GPS units on the incident be set to the same format!

If you are dealing primarily with aircraft or in a metro environment, it is suggested that datum are set to WGS 84. Quad maps are typically NAD 27. Often the position format can be printed on the IAP cover page.




Visual 6.14

## TABLET AND SMARTPHONE APPLICATIONS

**Desktop Mapping Advantages**

- Minimal learning curve and relatively inexpensive compared to GIS software.
- GPS compatible.
- Calculates acreage and distance.
- Easy to draw lines and add symbols.
- Display various navigation grids.
- Print IAP and tiled display maps.
- May or may not import shape files.



Visual 6.15

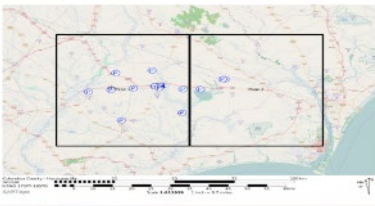

**Desktop Mapping Software**

- SARTopo (internet based)
- Terrain Navigator Pro
- DeLorme Topo
- MARPLOT
- GoogleEarth/Pro
- Gmap4 (internet based)
- Others?



Visual 6.16

**SARTopo Example**

Visual 6.17

## DESKTOP MAPPING ADVANTAGES

Ensure the mapping program covers, at a minimum, your local jurisdiction.

## DESKTOP MAPPING SOFTWARE

Considering the usefulness of the desktop mapping software, it is relatively inexpensive. The software should include topographic U.S. maps and the street atlas overlay.

Use the software to identify:

- Population demographics of the area.
- Issues that could affect incident response.
- Distance from one area to another.
- Latitude and longitude.
- Percent grade of a line.

## SARTOPO EXAMPLE

This image is a SARTopo example of Columbus County after Hurricane Matthew.

*Example courtesy of National Capital Region IMT GIS.*

**Note:** Inclusion in the course does not constitute an endorsement of this product and is for instructional purposes only.



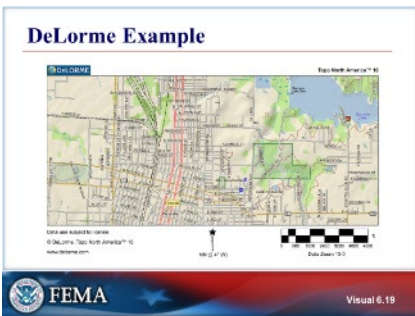
Visual 6.18

## TERRAIN NAVIGATOR PRO

This image provides an example of a Search & Rescue IAP map created with Terrain Navigator Pro. (Map courtesy of Haywood County Emergency Management IMT.)

Inclusion in the course does not constitute an endorsement of this product and is for instructional purposes only.

- Allows various navigational grids to be printed on the map borders.
- Various ICS Symbols.
- Radius "rings" for distance.

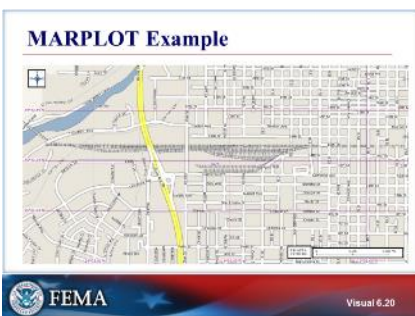


Visual 6.19

## DELORME EXAMPLE

This image provides an example of a map created from DeLorme Topo.

This does not constitute an endorsement of this product and is for instructional purposes only.



Visual 6.20

## MARPLOT EXAMPLE

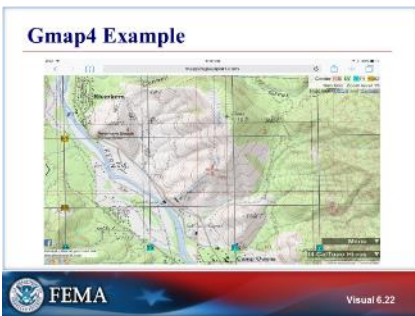
This image provides an example of a map produced in MARPLOT. A free mapping program from the US Government.



Visual 6.21

## GOOGLE EARTH EXAMPLE

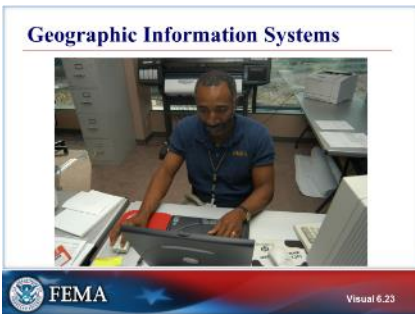
This image provides an example of a map produced in Google Earth.



Visual 6.22

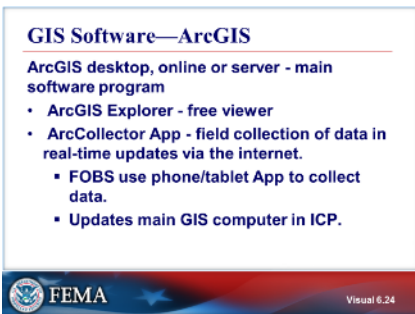
## GMAP4 EXAMPLE

This image provides an example of a map produced in Gmap4.



Visual 6.23

## GEOGRAPHIC INFORMATION SYSTEMS



Visual 6.24


## GIS SOFTWARE – ARCGIS

Environmental Systems Research Institute (ESRI) is the company that developed the ArcGIS mapping software.

- ArcGIS Desktop is the GIS software predominately used on workstations.
- ArcGIS Explorer – free viewer.
- ArcCollector App – field collection of data in real-time updates via the internet.

**GIS**

- Great display maps.
- Large color displays possible.
- Custom scaling and sizing of maps.
- Standard sizes:
  - A – 8½" x 11"
  - B – 11" x 17"
  - C – 17" x 22"
  - D – 22" x 34"
  - E – 34" x 44"

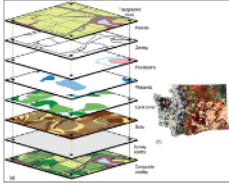


FEMA Visual 6.25

Visual 6.25

**Spatial Data Layers**

- Visual rep of a geographic dataset.
- Many forms: shape file, coverage, geo-database feature class, raster, etc.
- GIS provides tools and hardware to create, store, analyze, and display data layers.

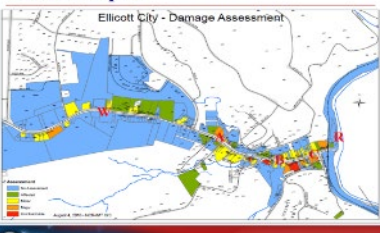


FEMA Visual 6.26

Visual 6.26

**GIS Examples**

Ellicott City - Damage Assessment



FEMA Visual 6.27

Visual 6.27

Hurricane Matthew Flood Event  
Lumberton, NC



FEMA Visual 6.28

Visual 6.28

**GIS**

ArcGIS mapping software develops maps with color and prints at various sizes.

**SPATIAL DATA LAYERS**

Data layers are visual representations of a geographic dataset. Data layers can take many forms such as shape file, coverage, geo-database feature class, raster, etc. A GIS provides the tools and hardware needed to create store, analyze, and display data layers.

Spatial layer information is not always clear. The use of GIS technologies can help identify and analyze information.

**GIS EXAMPLES**

This image provides an example of a map produced from GIS technology.

This map is from the Ellicott City Floods in August 2016. The Pennsylvania All Hazards Team were assigned to this Incident along with National Capital Region (NCR) members.

*Map courtesy of NCR GIS Staff.*

This image provides another example of a map produced from GIS technology; this is the “before photo” using GIS.

Flood map was downloaded from "Inciweb" and produced by the North Carolina Forest Service.

*GIS courtesy of North Carolina Forest Service. Map retrieved from Inciweb: <http://inciweb.nwcg.gov>.*

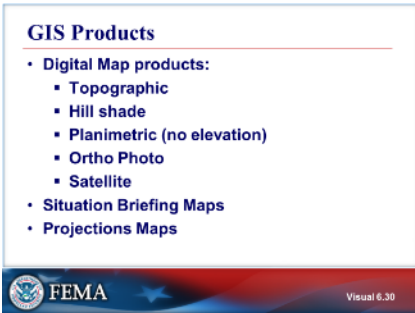


Visual 6.29

This image provides the “after photo” example of a map produced from GIS technology.

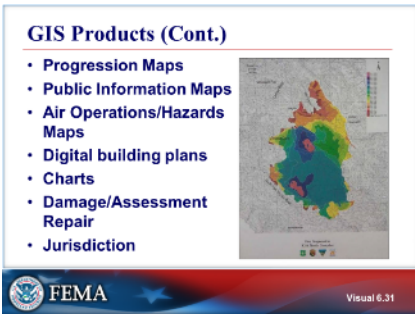
Flood map was downloaded from "Inciweb" and produced by the North Carolina Forest Service.

*GIS courtesy of North Carolina Forest Service. Map retrieved from Inciweb: <http://inciweb.nwccg.gov>.*



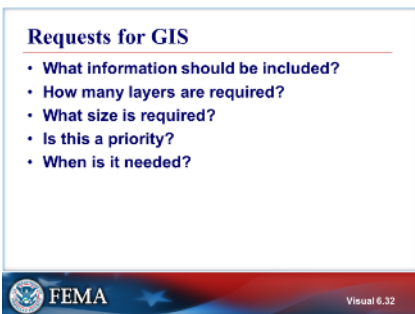
Visual 6.30

### GIS PRODUCTS



Visual 6.31

### GIS PRODUCTS (CONT.)

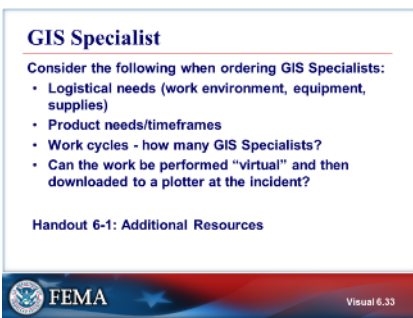


Visual 6.32

### REQUESTS FOR GIS

Questions that should be asked when requesting a GIS map:

- What information should be included?
  - Ensure it is information that is actually needed and not just a request for a nice looking map.
  - GIS maps should not be used for dynamic situations because they take a long time to build and plot.



Visual 6.33

- How many layers are required?
  - Too many layers on the map can make the map unclear.
- What size is required?
  - Sometimes people want large or elaborate maps when smaller or simpler suffices.
- Is this a priority? When is it needed?
  - You may get more requests than you can handle, therefore know the importance of the request and when it is needed.

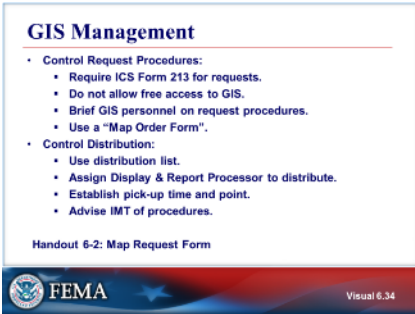
## GIS SPECIALIST

When ordering a GIS Specialist, you need to think about logistical requirements:

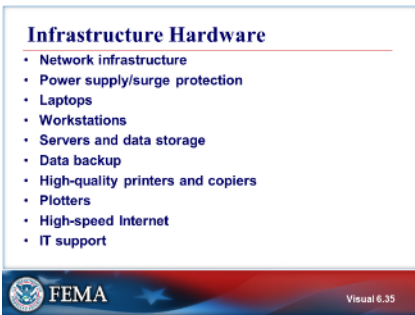
- GIS Specialists need a lot of project space and electricity.
- Consider humidity and the effects on the printing.
- Work with Logistics to obtain the resources you need.
- GIS Specialists typically come with their own computer and software programs, but make sure that this is requested.

You need a GIS Specialist who understands ICS and the environment in which he or she will work. The Specialist also needs to understand that he or she works for you.

Refer to Handout 6-1: Additional Resources.



Visual 6.34



Visual 6.35

## GIS MANAGEMENT

As mentioned previously, one of the biggest challenges with GIS is managing the requests you will receive.

Keep maps under lock and key because they tend to disappear.

Refer to Handout 6-2: Map Request Form.

## INFRASTRUCTURE HARDWARE

Power supply issues are generally the responsibility of the Facilities Unit Leader. Servers, workstations, and plotters require large amounts of stable power. Servers also require a battery backup and surge protection. Plotters and printers do not generally require battery backup units, but do require quality surge protection.

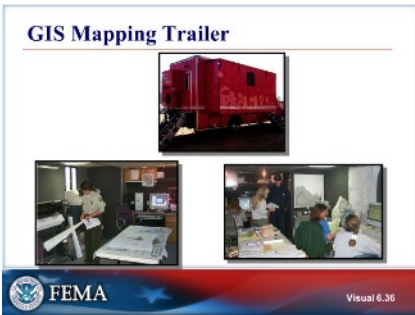
GIS work generally requires dedicated, high-quality printers and plotters. You should ensure there are enough appropriate printers to meet all current and future needs. GIS needs are generally incompatible with general printer needs and dedicated equipment is usually required. Plotters, printers, and copiers are all useful for specific purposes.

When you have GIS, there are several logistical issues that need to be considered, such as ensuring:

- GIS workstations have easy and adequate network access to the server.
- The space will be adequate to support 24/7 operation of a server.
- GIS data servers have a large amount of disk space and a lot of memory.
- The space the server is in has adequate power and ventilation because servers generate a lot of heat and their cooling fans can be noisy.



- There is not excessive dust or humidity in the space where the server is being operated.

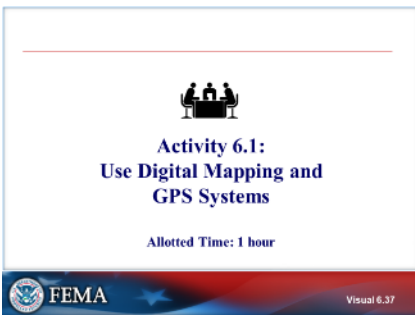


Visual 6.36

## GIS MAPPING TRAILER

These images provide examples of what a GIS Mapping Trailer might look like or what a GIS contractor might bring to an incident. GIS Specialists are typically present at incidents of national significance.

Contact local Emergency Operations Center (EOC), Joint Field Office (JFO), or Geographic Area Coordination Center (GACC) to find out what kind of office support and GIS contract support is available in that area. GIS contractors are used to working day and night, quickly and efficiently.



Visual 6.37


## ACTIVITY 6.1: USE DIGITAL MAPPING AND GPS SYSTEMS

The instructor will explain Activity 6.1.

You will have 1 hour to complete the activity.

**Objectives Review**

1. What should you consider when using GPS technology?
2. What should you consider when ordering GIS technology?
3. What are the latest technologies relevant to the Situation Unit?
4. What are the methods to navigate, collect data, and download from a GPS unit into a digital mapping program?

The image shows the FEMA logo on the left and the text "Visual 6.38" on the right, both within a red and blue banner at the bottom of the slide.

Visual 6.38

## OBJECTIVES REVIEW

### Unit Enabling Objectives

- Describe considerations for using GPS technology.
- Describe considerations for ordering GIS technology.
- Describe the latest technologies that are relevant to the Situation Unit.
- Demonstrate the field use of GPS units to navigate, collect data, and download into a digital mapping program.

## **Supplemental Materials**

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## Handout 6-1: Additional Resources

### Websites

#### USNG Materials

<http://www.usngcenter.org>

<http://www.usngapp.org>

#### Mapping

<https://www.google.org/crisisresponse/about/resources.html>

<http://www.hootsuite.com>

<https://gis.fema.gov>

<http://www.sartopo.com>

<http://www.mappingsupport.com>

<https://www.terrainnavigator.com>

<https://www.scribblemaps.com>

<https://igems.doi.gov>

#### GPS Maps for Download

<http://www.gpsfiledepot.com>

<http://www.garmin.com/en-US/shop/downloads/basecamp>

#### GIS Information

<http://www.esri.com>

<http://www.nps.gov/fire/wildland-fire/professional-tools/fire-gis-webinars.cfm>

### Books

GPS Made Easy by Mountaineer Books

Be an Expert with Map & Compass by Bjon & Carina Kiellstrom 2009

### FEMA EMI on Campus Training

#### E-190 ArcGIS for Emergency Managers (4 days)

##### Course Description:

This course teaches new GIS users how to apply the ArcGIS for Desktop software to support disaster mitigation, response, recovery, and risk management. ArcGIS for Desktop allows users to analyze their data and create geographic knowledge to examine relationships, test predictions, and ultimately make better decisions.

Participants complete numerous hands-on activities that help them learn to develop informative maps as well as to use tools that answer questions based on where things are located and what is known about them. It also develops a variety of skills that can be used to create, edit, manage and analyze both spatial and tabular data. While this course does not provide hands-on instruction specifically on Hazus-MH, all activities use Hazus-MH inventory and analysis outputs.

## FEMA Online Training

### IS-922: Applications of GIS for Emergency Management

#### Course Overview:

The goal of this course is to explore how GIS technology can support the emergency management community. Topics addressed in this course include:

- GIS fundamentals and history.
- How GIS is used in emergency management.
- Tools available to enhance GIS usefulness.

#### Course Objectives:

At the completion of this course, participants should be able to:

- Describe the types of products that GIS can produce.
- Explain the role that GIS plays in supporting emergency management through each mission area.
- Understand the types of technology options that are currently available, and equip you with a list of questions and issues that you should consider when choosing the best solution for your organization.

#### Primary Audience

This course is designed for individuals who supervise emergency management protection, prevention, response, recovery, and mitigation operations.

### IS-60.B: The Homeland Security Geospatial Concept-of-Operations (GeoCONOPS) for Planners and Decision Makers

The Homeland Security Geospatial Concept-of-Operations (GeoCONOPS) is a mission blueprint that supports emergency managers, incident commanders and geospatial practitioners to identify points of collaboration, best practices, technical capabilities and authoritative data sources to improve the effectiveness of geospatial information and tools that support incident management. The three courses are designed to provide users with information explaining the importance and relevance of the GeoCONOPS to the broader homeland security community to encourage engagement and participation in the continued enhancement and expansion of the content of the GeoCONOPS.

## **IS-61.B: The Homeland Security Geospatial Concept-of-Operations (GeoCONOPS) In Depth**

The Homeland Security Geospatial Concept of Operations has been designed to present the 4 basic values of the GeoCONOPS to users from several perspectives:

- Points-of-Collaboration
- Technical Capabilities
- Sources for Authoritative Data
- Best Practices

These perspectives include technical, policy and doctrine and professional. The module “GeoCONOPS In-Depth” focuses on the GeoCONOPS relevance and importance to federal policy and doctrine for emergency management with a focus on the Presidential Preparedness Directive – PPD-8 and the National Incident Management System (NIMS). At the conclusion of this module, students will be familiarized with the importance of the 4 key values of the GeoCONOPS to the National Preparedness System, NIMS and the Incident Command System (ICS)

### Primary Audience

Geospatial technical personnel supporting operations centers at State and Local Government; this will also include technical staff located in DHS regional offices

## **IS-62.B: The Homeland Security Geospatial Concept-of-Operations (GeoCONOPS) In Use**

### Course Overview

The Homeland Security Geospatial Concept of Operations has been designed to present the 4 basic values of the GeoCONOPS to users from several perspectives:

- Points-of-Collaboration
- Technical Capabilities
- Sources for Authoritative Data
- Best Practices

These perspectives include professional, technical and policy and doctrine. The module “GeoCONOPS In Practice” focuses on the importance of the GeoCONOPS to the professional roles of emergency manager, incident commander and geospatial practitioner. This module presents the content of the GeoCONOPS using one of two scenarios that are incorporated into the GeoCONOPS. At the conclusion of this module, students will be familiarized with the 4 key values of the GeoCONOPS in support of the different roles that are critical to emergency management.

**IS-63.B: Geospatial Information Infrastructure (GII)**

## Course Overview

The DHS GII is an array of managed geospatial data services, tools and capabilities that support the full range of mission within the Department. This course will familiarize the student with the content, tools and capabilities of the GII and will provide instructions how students can best connect to the rich content of the GII.

## Primary Audience

Geospatial technical personnel supporting operations centers at State and Local Government; this will also include technical staff located in DHS regional offices.

**IS-103: Geospatial Information Systems Specialist**

## Course Overview

This independent study course prepares students to successfully assume the role and responsibilities of a Geospatial Information System (GIS) Specialist during a disaster situation. As they complete this course, students will learn how to use their GIS skills to support other members of a Joint Field Office (JFO) disaster response and recovery team and successfully meet the responsibilities assigned to them. Students will also learn what types of products need to be produced and what procedures must be followed to ensure that products are produced correctly and in a timely manner.

## Course Objectives:

- Recognize the role a GIS Specialist performs while supporting a response and recovery operation
- Identify likely sources of information and data within FEMA and the emergency management community
- Identify the types of products commonly needed by FEMA programs and decision makers during an operation
- Recognize best practices for establishing and maintaining data flow, products and timelines during an incident
- Recognize how to appropriately handle and protect licensed, sensitive, or personal data
- Recognize how to use Remote Sensing products



## Primary Audience

This course is designed primarily for GIS Specialists newly employed with FEMA or other emergency response organizations. Students should already have a basic working knowledge of standard GIS software applications.

## Prerequisites

Prior to completing this course, it is highly recommended that the student have:

- Opened the Geospatial Information System Specialist (GISP) task book, or
- Held the equivalent position in the NRCC/RRCC (when developed)
- Students must also have basic geospatial knowledge and skills, including:
  - Knowledge of how to make a map and other geospatial products
  - Knowledge of basic analytics
  - Knowledge of the basic fundamentals of cartography and geospatial terminology
  - The ability to use standard GIS software and equipment such as:
    - ESRI's ArcGIS software, including Spatial Analyst
    - Adobe products
    - Google Earth
    - Large format printers
    - Microsoft Office suite
    - Handheld GPS devices
    - Modeling and decision support software such as HAZUS
    - Computers

Note: Students may come to FEMA with prior geospatial training and knowledge, or it may be developed through on-the-job training or courses.

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## Handout 6-2: Map Request Form

### Map Request Form

Date: \_\_\_/\_\_\_/\_\_\_

Desired Delivery Date and Time: \_\_\_/\_\_\_/\_\_\_ \_\_\_\_AM/PM

Requested by: \_\_\_\_\_

Deliver to: \_\_\_\_\_

Quantity: \_\_\_\_\_

Audience (circle): **Ops** **Public** **Planning** **Other**\_\_\_\_\_

#### Physical Map Properties

Format (circle): **Electronic** **Hard Copy**

If electronic, circle desired file format: **PDF** **JPEG** **Other**\_\_\_\_\_

Provide your email: \_\_\_\_\_

Size (circle): **8.5 X 11 in** **11 X 17 in** **17 X 22 in** **36 X 48 in** **Other**\_\_\_\_\_

Orientation (circle): **Landscape** **Portrait**

#### Map Design Properties

Color (circle): **Black and white** **Color**

Title: \_\_\_\_\_

Lat/Long Grid (circle): **Y** **N**

Layers (check all that apply):

- |  |  |
|--|--|
| <input type="checkbox"/> <b>Topography</b>     | <input type="checkbox"/> <b>Protection Zones</b> |
| <input type="checkbox"/> <b>Hillshade</b>      | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Roads</b>          | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Ownership</b>      | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Rivers</b>         | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Cabins</b>         | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Allotments</b>     | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Fire Perimeter</b> | <input type="checkbox"/> <b>Other</b> _____      |
| <input type="checkbox"/> <b>Mileposts</b>      |  |
| <input type="checkbox"/> <b>ICS Symbols</b>    |  |
| <input type="checkbox"/> <b>Towns</b>          |  |

## Map Request Form (continued)

### Special Requests

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## Activity 6.1: Use Digital Mapping and GPS Systems

### Advanced Displays (optional) Activity 6.1—Unit 6

#### Purpose

The purpose of this activity is to allow students to become familiar with digital mapping systems and GPS.

#### Objectives

Students will demonstrate the ability to use digital mapping and GPS systems to support the Situation Unit Leader.

#### Activity Structure

This scenario-based activity is scheduled to last approximately 60 minutes, including participant interactions with digital mapping and GPS software and technology. Students will use GPS to record waypoints and download them on laptops using a digital mapping system. If Students do not have GPS, the Instructor will take the class outside to collect waypoints. Then the Instructor will perform a demonstration to the class.

#### Rules, Roles, and Responsibilities

Students will work individually or share their laptops with their neighbors if one is not available. Each group will assume the role of a Field Observer. Students will activate their GPS receivers to begin mapping waypoints. **Following are the specific activities and instructions for your participation in the activity:**

4. Follow instructions from the Instructor.
5. Activate your GPS receiver.
6. Record waypoints and create a tracking log, using your GPS system as directed by the Instructors.
7. Download the information to the digital mapping system.
8. Discuss your findings to the full class.

### Schedule

Activity Introduction and Overview	5 minutes	Classroom
Discussion/Documentation	45 minutes	Small Groups
Debrief/Review	10 minutes	Classroom

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# Unit 7: Staffing and Organizing

STUDENT MANUAL

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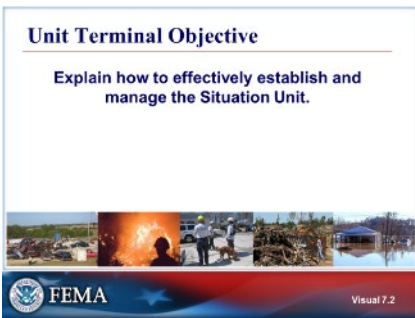
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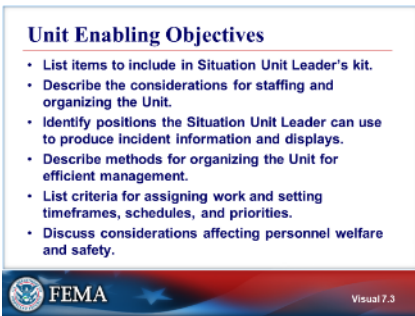




Visual 7.1



Visual 7.2



Visual 7.3

## UNIT 7: STAFFING & ORGANIZING

Through this unit, students will gain an understanding of the how to effectively manage the Situation Unit.

### UNIT TERMINAL OBJECTIVE

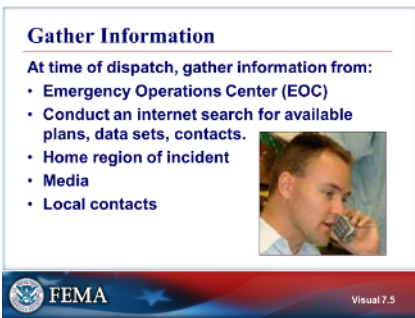
Explain how to effectively establish and maintain the Situation Unit.

### UNIT ENABLING OBJECTIVES

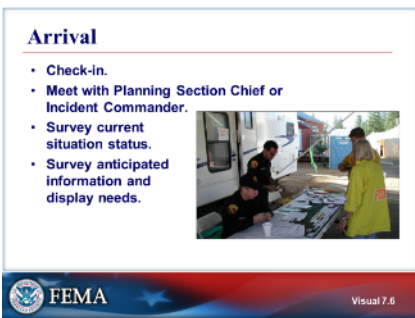
- List items to include in the Situation Unit Leader's kit.
- Describe the considerations for staffing and organizing the unit.
- Identify positions the Situation Unit Leader can use to produce incident information and displays.
- Describe methods for organizing the unit for efficient management.
- List criteria for assigning work and setting timeframes, schedules, and priorities.
- Discuss considerations affecting personnel welfare and safety.



Visual 7.4



Visual 7.5



Visual 7.6

## INITIAL RESPONSE & ASSESSMENT

### GATHERING INFORMATION

Sources of information upon dispatch.

- EOC
- Media
- Local contacts
- Home region of incident

To facilitate the response, it is advantageous to gather as much information before your assignment.


### ARRIVAL

When you arrive at an incident, the first thing you need to do is check-in with the Resource Unit Leader.

Typically, teams develop standard procedures for checking in. If you are responding as a single resource or your team does not have a set process, then you will have to figure it out when you arrive.

**Situation Unit Leader Kit**

Items to Place in Your Kit	
Pens & pencils (wet erase pens, permanent & felt-tip markers)	Scissors and exacto knife
Glue and tape	Laptop computer
Straight edge	Portable printer
Laminate	Digital camera
Dot grids	GPS
White-out	Weather kit
Templates	Prefab legends




Visual 7.7

## SITUATION UNIT LEADER KIT

This kit is sometimes called a Go Kit.

**Materials to Obtain Upon Arrival**

Obtain Upon Arrival
Maps of the incident (topographic and planimetric)
Easel pad paper
Work space
Display devices
Laminate
Phone/Data Line
Copy machine





Visual 7.8

## MATERIALS TO OBTAIN UPON ARRIVAL

When you arrive at an incident, ensure to put in a request for a workspace. If possible, request your own copy machine as well. There are several additional items not already included in your kit that you may need to order once you arrive. Always order more maps than you think you will need.

**Initial Planning Section Chief Briefing**

- Incident size and scope
- Assigned resources
- Incident potential
- Logistical considerations
- Timelines and priorities
- Staffing of Situation Unit
- Incident facilities
- Expectations
- Obtain copy of ICS Form 201s, IAPs, and ICS Form 209s

Visual 7.9

## INITIAL PLANNING SECTION CHIEF BRIEFING

At this Briefing, you should get a good feel for incident size, scope, assigned resources, and incident potential. As a result of this Briefing, you should have also have a good sense of your staffing needs. You should obtain a copy of any existing ICS Forms 201, ICS Forms 209, or IAPs.

**Unit Setup**

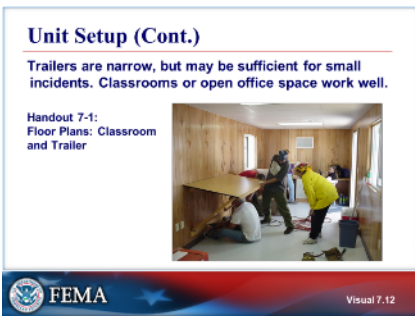



Visual 7.10

## UNIT SETUP



Visual 7.11



Visual 7.12



Visual 7.13

## UNIT SETUP (CONT.)

A large, open space for the Situation Unit allows for room to lay out maps during development and to display different types of information pertinent to the incident. The best options are large rooms or tents, preferably in a quiet area.

## UNIT SETUP (CONT.)

The image on this visual is of a trailer, which can be another alternative location for the Situation Unit. You may even set up in a classroom of a school.

**Refer** to Handout 7-1: Floor Plans: Classroom and Trailer.

## SITUATION SETUP

This image is an example of the how a Situation Unit might set up. This space supports a Situation Unit Leader, a Situation Unit Leader Trainee, an Incident Meteorologist, and four Display Processors. It contains an 8' x 8' mapping table with a storage shelf that allows for large maps.

The arrow shows alignment of the table and map to the North.

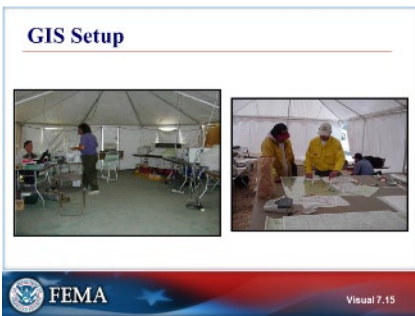


Visual 7.14

## SITUATION SETUP (CONT.)

Set up the Debriefing area on the outskirts of the Situation Unit so people do not wander around and distract Display Processors as they create maps.

Put extra thought into the best place to display maps. It is important to consider the placement of maps within the Situation Unit. You may have a number of people coming by to look at the maps, and you want to make sure they are out of the way of the work being done.



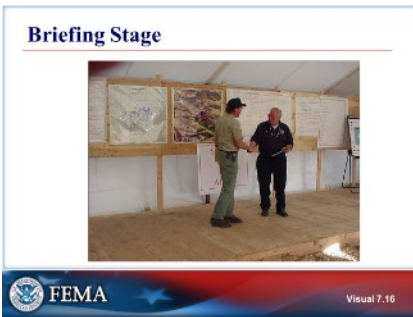
Visual 7.15

## GIS SETUP

It is ideal to have a separate space for GIS. Ensure they are set up in a clean space and protected from inclement weather. It is important to keep dust and dirt off of the plotters.

When setting up space for GIS, the following should be considered:

- Computer equipment and plotter
- Problems like dust, humidity, heat
- The need for separate phone and data lines
- The need for high-speed data lines:
  - DSL
  - Satellite—Star Band, Direct Way
- Shielding the GIS from walk-in traffic



Visual 7.16

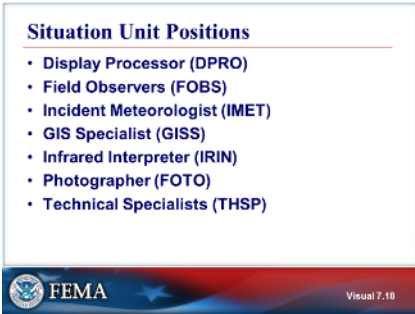
## BRIEFING STAGE

This image give an example of the Briefing Stage and the various displays for Briefings. It is the Situation Unit Leader's responsibility to keep the displays up to date.



Visual 7.17

## UNIT STAFFING



Visual 7.18

## SITUATION UNIT POSITIONS

**Display Processor**—Responsible for the display of incident status information obtained from Field Observers, resource status reports, aerial and orthography photographs, and infrared data.

- Determines number, types, and location of displays required.
- Determines map requirements for IAP.
- Assists Situation Unit Leader in analyzing and evaluating field reports.

**Field Observer**—Responsible for collecting situation information from personal observations at the incident and for providing information to the Situation Unit Leader.

- Identifies all facility locations.
- Immediately reports any condition observed that may cause danger and safety hazard to personnel.
- Gathers information that leads to accurate predictions.

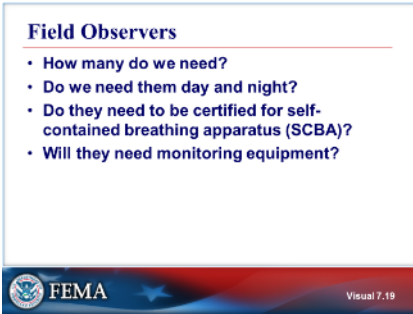
**Incident Meteorologist**—Responsible for collecting current incident weather information and providing the information to the Situation Unit Leader.

- Records and reports weather observations at assigned locations on schedule.

**Geographic Information Specialists**—Responsible for managing information needs.

The **Infrared Interpreter**—Responsible for directing infrared mapping operations when assigned.

Depending on the incident, a **photographer** or a myriad of other **technical specialists** may be required.



Visual 7.19

## FIELD OBSERVERS

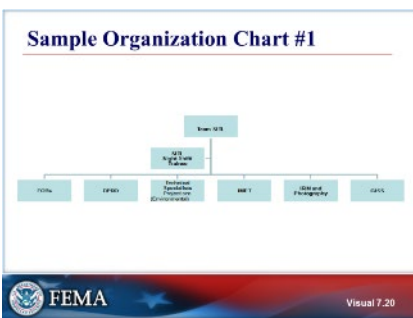
Field Observers are important because they can obtain information when other sources of information can not verify what you need to know.

You will need to specify exactly what you are looking for on the ICS Form 213 when you order the Field Observers.

During an incident, data verification is necessary. Various individuals will provide information. The Situation Unit Leader must determine what data is valid and identify areas where mistakes were made.

Accountability of Field Observers is important. They must understand the medical plan, hazard areas, and must go to assigned location and not stray from their assigned areas to collect information.

Field Observers need protective equipment during an incident to avoid injury associated with the risks of the incident. Field Observers must enter the risks area with the proper skills. For example, when observing a hazardous materials incident, they must have a HAZMAT background. If they are working in a remote area, they may need to stay in pairs for safety.

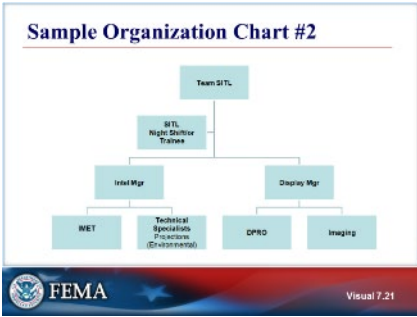


Visual 7.20

## SAMPLE ORGANIZATION CHART #1

The organization chart on this visual is one example of how a Situation Unit might be set up for a small to medium size incident.

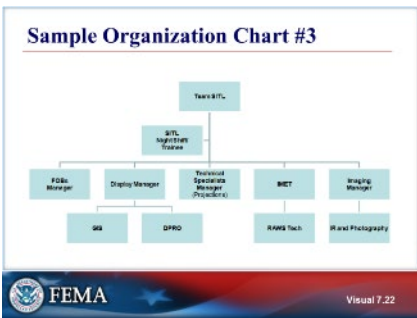




Visual 7.21

**SAMPLE ORGANIZATION CHART #2**

The organization chart on this visual is one example of how a Situation Unit might be set up for a long-term, very large, or complex incident.



Visual 7.22

**SAMPLE ORGANIZATION CHART #3**

The organization chart on this visual is to provide another example of an organization chart for the Situation Unit for a long-term, very large, or complex incident.

Personnel in the manager positions should be qualified in the positions they are managing or be qualified Situation Unit Leaders.

**Staffing Considerations**

- Workload
- Ordering lag/travel time
- Staffing hours
- Size and complexity
- IMT needs and products
- Public impact
- Imaging needs
- Projection needs –Technical Specialists?
- Threats/risks
- Available on-scene personnel



FEMA Visual 7.23

Visual 7.23

## STAFFING CONSIDERATIONS

When it feels like there is undue stress mounting at an incident, it may be an indication that the workload needs to be split. Try to anticipate increases in workload; plan ahead and maintain a list of personnel who you can call.

When staffing your Unit, you will need to consider the variety of information you may provide. Think about each position, and identify what type of data and information each position would be responsible for gathering.

When staffing for information, consider who should debrief operations personnel. Remember that locals can be some of your best Technical Specialists.

Manage span of control and organize by using manager positions.

- Do not duplicate positions or jobs done by other positions.
- Keep it streamlined.
- Only activate positions that are really needed.
- Assign the right people to the right job for the right reason.

**Technical Specialists**

How do you handle all risks?

- Technical or scientific experts
- Local experts
- Computer modeling programs
- "Virtual" Technical Specialists

FEMA Visual 7.24

Visual 7.24

## TECHNICAL SPECIALISTS

**State:** Now let's discuss the Technical Specialists.


Technical Specialists are resources that can assist with technical knowledge you do not have within the existing IMT.

Order Technical Specialists if you have an incident in which you are unfamiliar with the subject matter.

Computer modeling programs are another useful tool for gathering information that you cannot obtain any other way. Another option is to find someone who knows the local area well and ask them to help assist you during the incident.

**Technical Specialist Considerations**

- Begin identifying needs and sources early.
- Think outside of the box regarding where to obtain a Technical Specialist.
- Technical Specialists may not be accustomed to emergency operations and pressures.
- Provide a thorough briefing to explain position and limitations.
- Check in regularly to provide support.



Visual 7.25

## TECHNICAL SPECIALIST CONSIDERATIONS

When ordering a Technical Specialist to be part of your Unit:

- Start identifying needs and sources early.
- Identify a source for obtaining the Technical Specialist.
- Provide thorough Briefings and continued communication as necessary.
- Inquire about needed support and explain limitations.

**Types of Technical Specialists?**

Throughout the following slides think of the answers to these questions:

- What kind of Technical Specialist might be needed?
- Where could they come from?




Visual 7.26

## TYPES OF TECHNICAL SPECIALISTS?

Throughout the following visuals you will be provided with sample scenarios. Be prepared to and asked these two questions:

- What kind of Technical Specialist might be needed?
- Where could they come from?

**HAZMAT Incident**

What kind of Technical Specialists might be needed?  
From where could they come?





Visual 7.27

## HAZMAT INCIDENT

**Sources of HAZMAT Technical Specialists**

- Local Government
  - HAZMAT Techs on staff
  - Environmental Health
  - Emergency Services
  - Planning/Building Dept
  - Public Works
- State Agencies
  - EPA/Dept of Ecology
  - Health/Water
  - State Fire Marshal
  - Office of Emergency Services
  - Transportation
  - Company or Product Reps
  - Environmental/Emergency Contractors
- Environmental Protection Agency (EPA)
  - Local offices
  - Regional Offices
  - HQ
  - Special Teams
  - Contractors
- Other Federal Agencies
  - U.S. Coast Guard (USCG)
  - Department of Defense (DOD)
  - Department of Energy (DOE)
  - National Institute for Occupational Safety and Health (NIOSH)
  - US Geological Survey (USGS)
  - Product Organizations



Visual 7.28

## SOURCES OF HAZMAT TECHNICAL SPECIALISTS

**CBRNE/WMD Incident**  
What kind of Technical Specialists might be needed?  
From where could they come?




FEMA Visual 7.29

### CBRNE/WMD INCIDENT

**Sources of CBRNE/WMD Technical Specialists**

- HAZMAT resources and possibly:
  - Federal Bureau of Investigation (FBI)
  - DOD (Civilian/Uniformed Services)
  - DOE
  - NIOSH
  - Metropolitan Medical Response System (MMRS)
  - Health Department



FEMA Visual 7.30

### SOURCES OF CBRNE/WMD TECHNICAL SPECIALISTS

**Flooding Incident**  
What kind of Technical Specialists might be needed?  
From where could they come?



FEMA Visual 7.31

### FLOODING INCIDENT

**Sources of Technical Specialists for a Flood**

- Flood control district
- Department of Water Resources
- Army Corps of Engineers
- Levee district
- Public works
- Local planning dept
- Waste management
- Health department



FEMA Visual 7.32

### SOURCES OF TECHNICAL SPECIALISTS FOR A FLOOD

**Earthquake Incident**

What kind of Technical Specialists might be needed?  
From where could they come?



FEMA Visual 7.33

Visual 7.33

**Sources of Technical Specialists for an Earthquake**

- Geologists
- Structural Engineers
- Fire Protection Engineer
- HAZMAT Technical Specialists
- Building department
- Public works
- Public utilities



FEMA Visual 7.34

Visual 7.34

**Common Uses of Technical Specialists**

- Performing identification and hazard assessment.
- Performing analysis of risk and threats.
- Performing modeling and projections .
- Performing analysis of mitigation and decontamination techniques.
- Operating specialized equipment.
- Interpreting outputs.

FEMA Visual 7.35

Visual 7.35

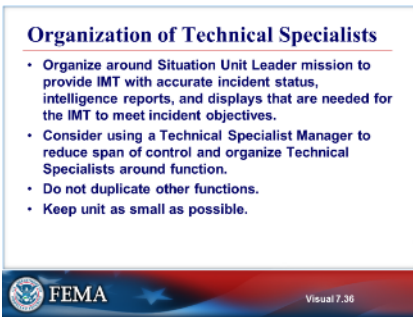
## EARTHQUAKE INCIDENT

## SOURCES OF TECHNICAL SPECIALISTS FOR AN EARTHQUAKE

## COMMON USES OF TECHNICAL SPECIALISTS

Common uses of Technical Specialists:

- Performing identification and hazard assessments.
- Performing analyses of risks and threats.
- Performing modeling and projections.
- Performing analyses of mitigation and decontamination techniques.
- Operating specialized equipment.
- Interpreting outputs.



Visual 7.36



Visual 7.37

## ORGANIZATION OF TECHNICAL SPECIALISTS

Effective ways of organizing Technical Specialists.

- The mission of the Situation Unit is to provide IMT with accurate incident status, information reports, and displays that are needed for the IMT to achieve the incident objectives. The unit should be organized to most efficiently meet this mission.
- Consider using a Technical Specialist Manager to reduce span of control, and organize Technical Specialists around a function.
- As stated previously, it is important that functions are not duplicated and that the Unit is as small as possible.


## TECHNICAL SPECIALISTS UNITS

If the workload in a Technical Specialist team becomes too large or complicated for the Situation Unit Leader to manage, the Planning Section Chief may create a Technical Specialists Unit for the purpose of supporting the planning process. Examples include:

- Contingency Planning
- Rehabilitation
- Water Resources
- Environmental—EPA has created an Environmental Unit to support the Situation Unit in dealing with the overwhelming level of span of control.

**Coordination with Technical Specialist Unit**

- Technical Specialist Units should not duplicate positions and efforts of other units
- The PSC, SITL, and the Planning Technical Specialist Units must develop clear goals and objectives together.
- The PSC and Unit Leaders must develop clear divisions of labor.
- Clear roles in the Planning Process.



Visual 7.38

Visual 7.38

## COORDINATION WITH THE TECHNICAL SPECIALIST UNIT

Methods of ensuring coordination with the Technical Specialist Unit.

- Technical Specialist Units should not duplicate positions and efforts of other units.
- The Planning Section Chief, Situation Unit Leaders, and the Planning Technical Specialists Units must develop clear goals and objectives together.
- The Planning Section Chief and Unit Leaders must develop clear divisions of labor.
- Technical Specialists may not be familiar with the Incident Command System and the Planning P Process. Therefore, the SITL or PSC may need to spend time briefing them on their roles in the Planning Process.

**Unit Management**






Visual 7.39

Visual 7.39

## UNIT MANAGEMENT

**Management of the Situation Unit**

- Assign work
- Set timeframes
- Schedule personnel
- Prioritize work

Visual 7.40


Visual 7.40

## MANAGEMENT OF THE SITUATION UNIT

If you have a sufficient number of staff to support the incident, you may do very little hands-on work. It is your job to make sure that the right people are doing the right things to support the needs of an incident. Any additional work that is unassigned becomes the responsibility of the Situation Unit Leader.

**Criteria for Successful Management**


- Define goals and objectives to personnel
  - Get input
  - Post
- Assign personnel based on qualifications, skills, and aptitude
  - Interview before assigning
- Schedule staff around workload
  - Post schedule
  - Get input from personnel



Visual 7.41

**Criteria for Successful Management (Cont.)**

- Practice active listening.
  - Pay attention to what is and is not said.
- Be as flexible as you can.
  - This is an emergency, but don't add to it.
- Evaluate work and provide prompt feedback.
  - Do not let problems fester.



Visual 7.42

## CRITERIA FOR SUCCESSFUL MANAGEMENT

Staffing decisions should be made after assessing skill sets and workload. Once these decisions have been made, it is useful to post them within the Unit for everyone to reference. Providing good direction is an integral part of being a good manager. Remember knowledge is power, so share it.

## CRITERIA FOR SUCCESSFUL MANAGEMENT (CONT.)


There are several additional aspects of personnel management at an incident including:

- Thoroughly brief personnel.
  - Who, what, where, when, how, and why.
  - Emphasize safety.
- Evaluate work and provide prompt feedback.
  - Correct mistakes as soon as possible.
  - Do not let problems build up.
  - Use a positive and instructive approach.
  - Address issues as they arise. Do not wait for problems to fester.
- Provide well-balanced direction and control.
  - Don't micro-manage.
- Remember to delegate.



**Resolve Conflict**

- Watch out! Conflict can cripple a unit.
- Act early.
- Negotiation, separation, or demobilization.



FEMA Visual 7.43

Visual 7.43

**Personnel Welfare and Safety**

- Assign personnel to jobs for which they are qualified.
- Consider physical requirements.
- Recognize hazards.
- Brief on hazards and hazard mitigation.
  - Special precautions for extraordinary hazards.
- Ensure personnel have PPE.
- Monitor fatigue.
  - Common cause of driving accidents.

FEMA Visual 7.44

Visual 7.44

## RESOLVE CONFLICT

In emergency situations, people will get tired and lose their temper. Try to resolve these outbursts as best you can and separate people as needed.

If a staff member has a bad attitude, take them aside and try to resolve the issue. If the person will not produce quality work, then release that person because they are not meeting the needs of the Unit.

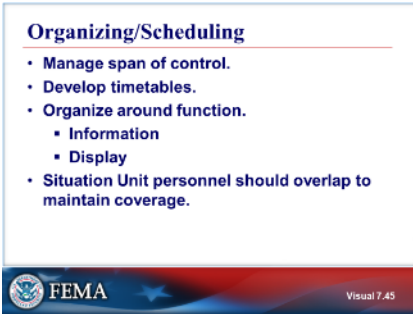
Do not tolerate incompetence.

## PERSONNEL WELFARE AND SAFETY

Consider physical requirements of jobs when assigning.

Monitor fatigue:

- Those who are not used to emergency situations may try to push themselves to the limit early on and then crash.
- If a staff member begins to show incompetence due to fatigue, send them to bed or give them a break.



Visual 7.45

## ORGANIZING/SCHEDULING

- Manage span of control.
  - Keep number of subordinates and equipment at manageable level.
  - Five subordinate personnel for each manager (1:5) is the guideline; however, effective incident management frequently necessitates significantly different ratios..
- Post timetables.
  - Develop timetables for production of specific output and products.
- Prioritize staff assignments.
- Organize around function:
  - Information
  - Display
- Scheduling is primarily determined by the Planning Section Chief's needs. Situation Unit personnel should overlap to maintain coverage.
  - Leave approximately 1 hour of overlap to brief your relief.
  - Keep written key points to pass on to your relief.



Visual 7.46

## SITUATION UNIT BRIEFINGS

Types of information that should be covered at the Situation Unit Briefings.

- Ensure that you provide adequate information to your staff.
- Pass on incident information as well as logistical information, feeding and sleeping arrangements, transportation needs, etc.

**Improving Unit Management**

If Unit is not functioning efficiently, consider:

- Re-evaluating unit goals and objectives in consultation with Planning Section Chief.
- Tightening procedures for requesting Unit products with IMT.
- Ensuring staff are organized in support of unit goals and objectives.




Visual 7.47

## IMPROVING UNIT MANAGEMENT

**Ordering Process**

1. Request specific resources on ICS Form 213.
2. Planning Section Chief approval.
3. Submit to Logistics or Supply.
4. FOLLOW UP.


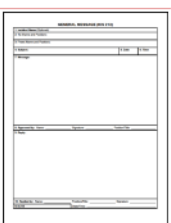


Visual 7.48

## ORDERING PROCESS

**ICS Form 213**

Refer to Handout 7-2.



Visual 7.49


## ICS FORM 213

Refer to Handout 7-2: ICS Form 213.

**Demobilization**

- Continually evaluate staffing levels.
- Consider demobilization of nonessential personnel.
- Determine who should go first.
  - Record their last day off.
  - Who wants to go home?
  - Who needs to go home?
- Performance Evaluations.

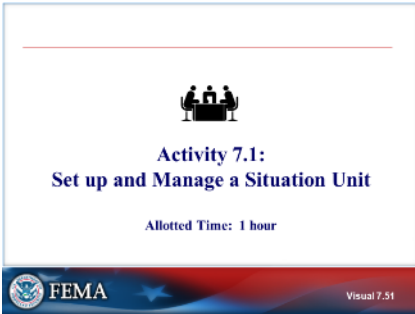
Handout 7-3: ICS Form 225



Visual 7.50

## DEMOBILIZATION

Refer to Handout 7-3: ICS Form 225 Incident Personnel Performance Rating.

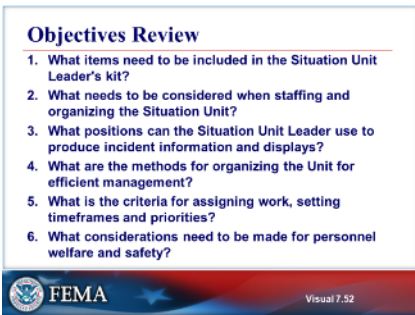


Visual 7.51

## ACTIVITY 7.1: SET UP AND MANAGE A SITUATION UNIT

The instructor will explain Activity 7.1.

You will have 1 hour to complete the activity.



Visual 7.52

## OBJECTIVES REVIEW

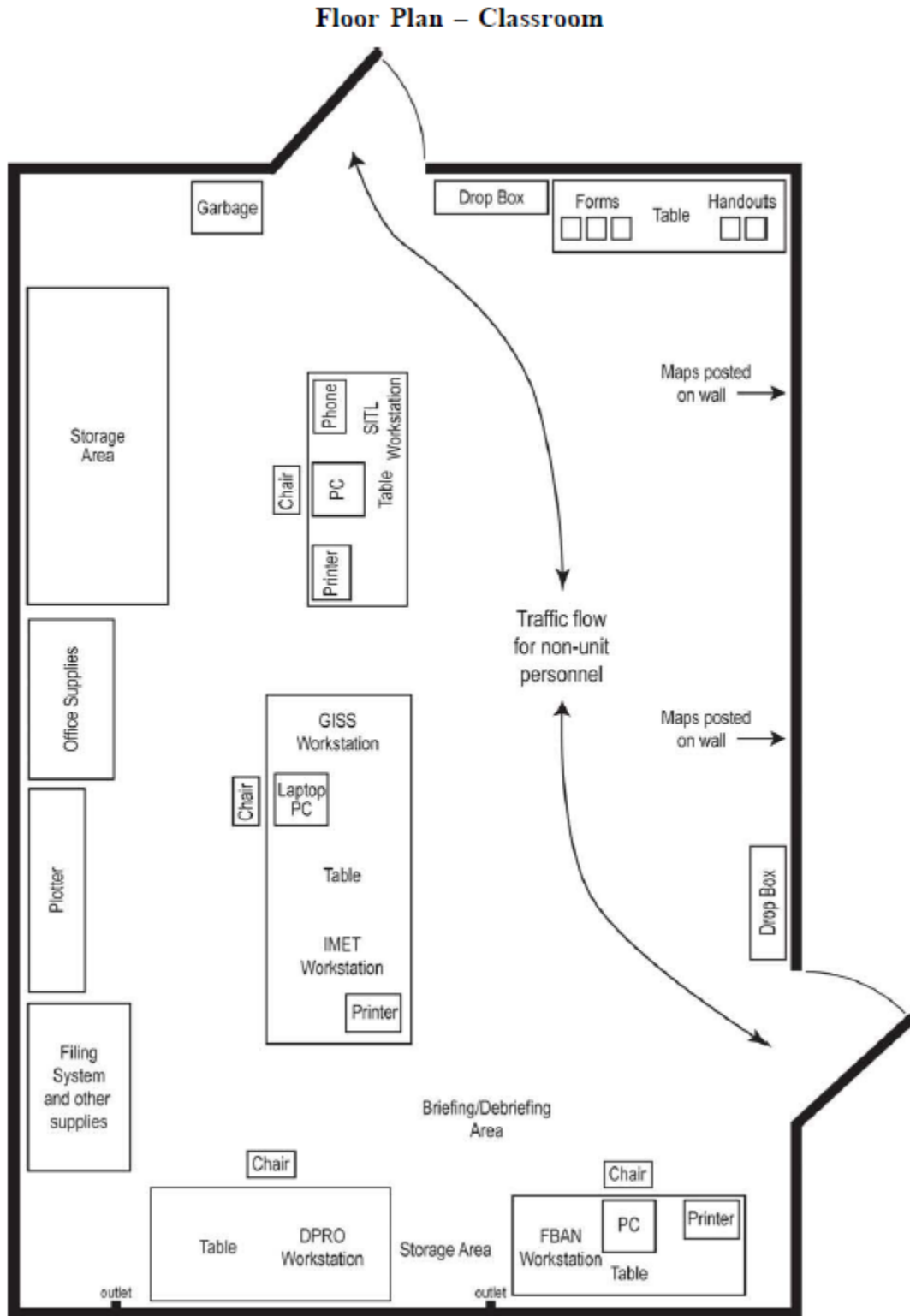
### Unit Enabling Objectives

- List items to include in the Situation Unit Leader's kit.
- Describe the considerations for staffing and organizing the Unit.
- Identify the ICS positions the Situation Unit Leader can utilize to produce incident information and displays.
- Describe methods for organizing the Unit for efficient management.
- List criteria for assigning work and setting timeframes, schedules, and priorities.
- Discuss consideration affecting personnel welfare and safety.

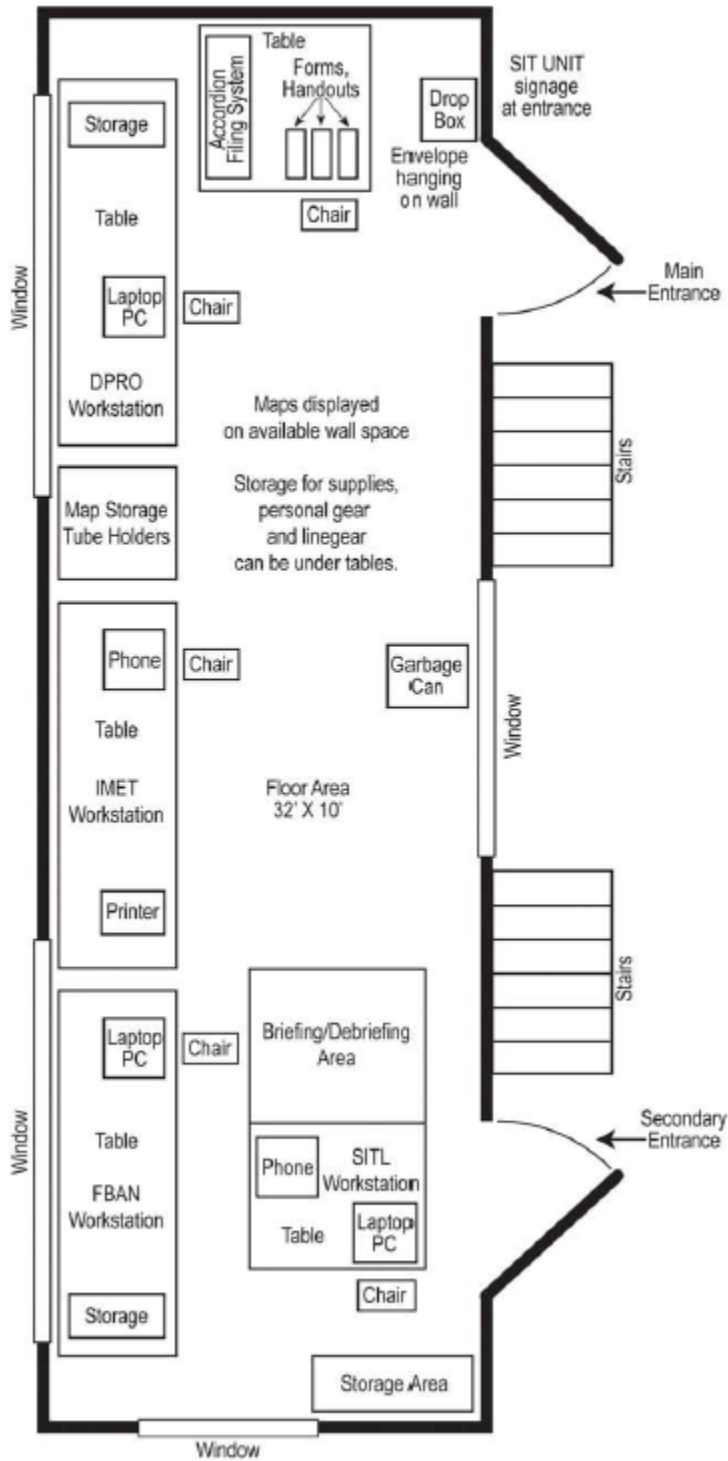
## **Supplemental Materials**

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### Handout 7-1: Floor Plans: Classroom and Trailer



### Floor Plan – Trailer





## **Handout 7-2: ICS Form 213**

Refer to EL\_964\_HO\_7-2\_ICs\_Form\_213.pdf

## **Handout 7-3: ICS Form 225**

Refer to EL\_964\_HO\_7-3\_ICs\_Form\_225.pdf

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## Activity 7.1: Set up and Manage a Situation Unit

### Staffing and Organizing Activity 7.1—Unit 7

#### Purpose

The purpose of this activity is to allow students to practice setting up and managing a Situation Unit using information from the scenario in Activities 3.1, 4.1, and 5.1.

#### Objectives

Students will:

- Demonstrate the ability to complete the ICS Form 213 General Message for the initial staff order for the next 8 operational periods.
- Organize and assign responsibilities to manage an effective Situation Unit.

#### Activity Structure

This scenario-based activity is scheduled to last approximately 60 minutes, including small group discussions and presentations of each group's answers. Students will demonstrate the ability to use ICS Form 213 General Message to order a staff. Students will also be responsible for creating an organizational chart as well as describing the responsibilities of each resource. Groups will then present their approaches to the full class.

#### Rules, Roles, and Responsibilities

Students will be divided into groups of 4–5. Each group will assume the role of the Situation Unit Leader. Students will respond to the situation based on their expert knowledge of response procedures, current plans in place in their community, and insights derived from training.

**Following are the specific activities and instructions for your participation in the activity:**

1. Within your work group, select a group spokesperson.
2. Review the information from scenario.
3. Based on this information, develop an organizational chart of a Situation Unit based on complexity and expected duration of incident.
4. Complete an ICS Form 213 General Message to order staff.
5. Be prepared to explain the responsibilities for each resource in your organizational chart.
6. Present your group's results to the full class.

## Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	5 minutes	Classroom
Discussion/Documentation	35 minutes	Small Groups
Debrief/Review	20 minutes	Classroom

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# Unit 8: Incident Situation Status Reports

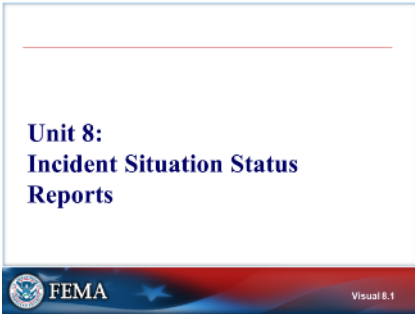
STUDENT MANUAL

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Visual 8.1

## UNIT 8: INCIDENT SITUATION STATUS REPORTS

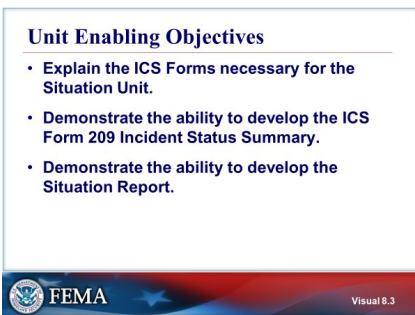
Through this unit, students will gain a thorough understanding of ICS Form 209, its importance, what information it contains, and how the Situation Unit Leader should go about ensuring it is correctly filled out.



Visual 8.2

## UNIT TERMINAL OBJECTIVE

Demonstrate the ability to complete the required documents to support the incident.



Visual 8.3


## UNIT ENABLING OBJECTIVES

- Explain the ICS Forms necessary for the Situation Unit.
- Demonstrate the ability to develop the ICS Form 209 Incident Status Summary.
- Demonstrate the ability to develop the Situation Report.

**ICS Form 209**

- Purpose of ICS Form 209 is to convey incident status and projection information to Agency Administrators (AAs).
- Used by Agency Administrators to plan for future impacts and to allocate resources.
- The ICS Form 209 is also used by the IMT and involved personnel as an incident briefing.

Handout 8-1: ICS Form 209  
 Handout 8-2: Sample ICS Form 209  
 Handout 8-3: Instructions for Completing ICS Form 209  
 Handout 8-4: Verbal Situation Report Outline



Visual 8.4

Visual 8.4

## ICS FORM 209



- Convey incident status and projection information to Agency Administrators.
- Agency Administrators use the ICS Form 209 to plan for future impacts and to allocate resources.
- IMT uses as a briefing tool for the status of the incident.

Refer to:

- Handout 8-1: Blank ICS Form 209
- Handout 8-2: Sample ICS Form 209
- Handout 8-3: Instructions for Completing ICS Form 209
- Handout 8-4: Verbal Situation Report Outline

**ICS Form 209 (Cont.)**

- Used by Public Information Officer as guide for information releases.
- Completed daily
- ICS Form 209 resembles Situation Unit Leader's job responsibilities.

Visual 8.5

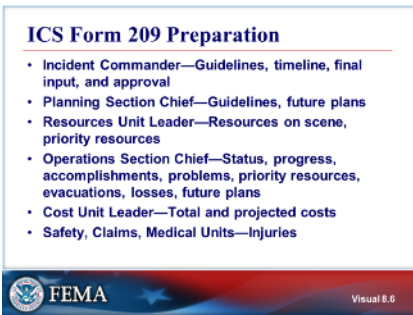
Visual 8.5

## ICS FORM 209 (CONT.)

ICS Form 209 ensures that everyone on the incident has the same information.

With the Planning Section Chief, establish who is responsible for completing ICS Form 209 and when it must be completed.

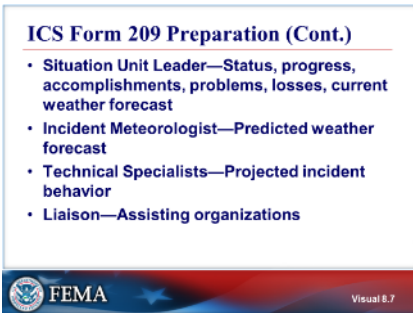




Visual 8.6

## ICS FORM 209 PREPARATION

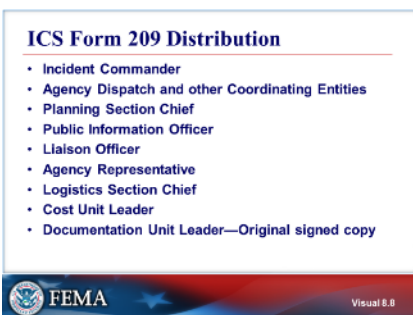
- The Incident Commander provides guidelines, timeline, and final input and approval.
- The Planning Section Chief provides guidelines and future plans.
- The Resources Unit Leader provides resources on scene and priority resources.
- The Operations Section Chief provides status, progress, accomplishments, problems, priority resources, evacuations, losses, and future plans.
- The Cost Unit Leader provides total and projected costs.
- The Safety, Claims, and Medical Units provide information on the number and type of injuries.



Visual 8.7

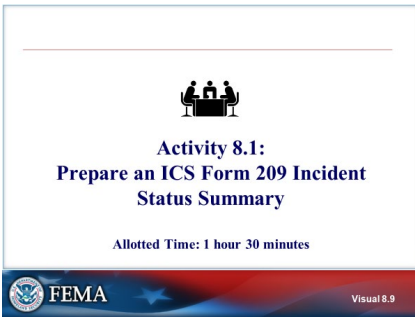
## ICS FORM 209 PREPARATION (CONT.)

- The Situation Unit Leader provides status, progress, accomplishments, problems, losses, and current weather forecast.
- The Incident Meteorologist provides predicted weather forecast.
- Technical Specialists provide projected incident behavior.
- The Liaison provides assisting organizations.



Visual 8.8

## ICS FORM 209 DISTRIBUTION

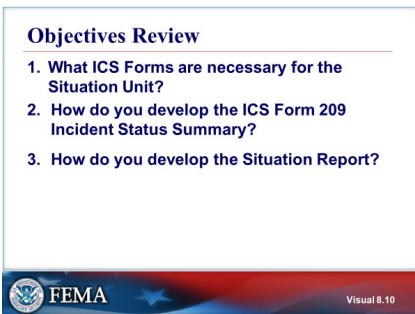


Visual 8.9

## ACTIVITY 8.1: PREPARE AN ICS FORM 209 INCIDENT STATUS SUMMARY

The instructor will explain Activity 8.1.

You will have 1 hour and 30 minutes to complete the activity.



Visual 8.10

## OBJECTIVES REVIEW

### Unit Enabling Objectives

- Explain the ICS Forms necessary for the Situation Unit.
- Demonstrate the capability to develop the ICS Form 209 Incident Status Summary.
- Demonstrate the capability to develop the Situation Report.

## **Supplemental Materials**

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### **Handout 8-1: Blank ICS Form 209**

Refer to EL\_964\_HO\_8-1\_ICs\_Form\_209.pdf

Note: You will need a blank ICS Form 209 for Activity 9.1 as well.

### **Handout 8-2: Sample ICS Form 209**

Students - Handout 8-2 will be distributed at the instructor's discretion.

### **Handout 8-3: Instructions for Completing ICS Form 209**

Refer to EL\_964\_HO\_8-3\_ICs\_Form\_209.pdf

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## **Handout 8-4: Verbal Situation Report Outline**

Introduction: Your Name & Incident Position

Name and Type of Incident (Fire/Flood/Maritime/Hazmat/Civil Unrest)

Date and Time, and Title of Briefing (Planning Meeting, Ops Briefing, etc.)

Extent of Incident, Current Perimeter, Area of Operation

Established Facilities

Systems/Infrastructure Affected (Power, Water, Sewage, Transportation, etc.)

Verified numbers of fatalities/Injuries

## Significant Impacts

Major Considerations (Approaching Weather Systems, High Priority Activities, Political Sensitivities, etc.)

Evacuations and Shelters (Populations Displaced)

Prognosis/Forecasts/Threats

Weather Forecast



## Activity 8.1: Prepare an ICS Form 209 Incident Status Summary

### Incident Status Summary Activity 8.1—Unit 8

#### Purpose

The purpose of this activity is to allow students to prepare an ICS Form 209 Incident Status Summary for a simulated incident using information from the scenario in Activity 3.1.

#### Objectives

Students will:

- List the responsibilities of the Situation Unit Leader in preparing the ICS Form 209 Incident Status Summary.
- Demonstrate the capability to prepare an ICS Form 209 Incident Status Summary.

#### Activity Structure

This scenario-based activity is scheduled to last approximately 90 minutes. Students will gather information needed for the preparation of the ICS Form 209 Incident Status Summary from Activity 3.1.

#### Rules, Roles, and Responsibilities

This will be an individual activity. Students will individually prepare an ICS Form 209 based on their gathered information from Activity 8.1. **Following are the specific activities and instructions for your participation in the activity:**

1. Review the information provided.
2. Given the data in the scenario and information, prepare an ICS Form 209 based on the first reporting period of the scenario.
3. Present your ICS Form 209 to the instructor for critique.

### Schedule

Activity	Duration	Participation Type
Activity Introduction and Overview	5 minutes	Classroom
Discussion/Documentation	60 minutes	Individual
Debrief/Review	25 minutes	Classroom

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# Unit 9: Planning Meetings and Briefings

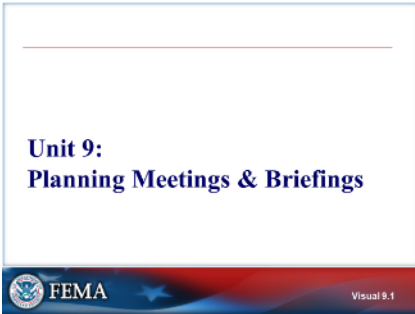
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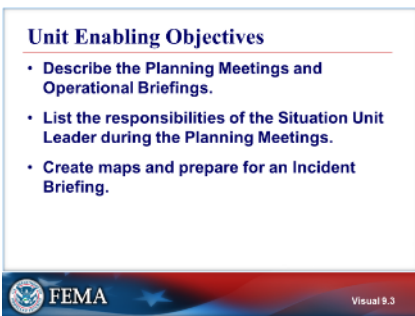
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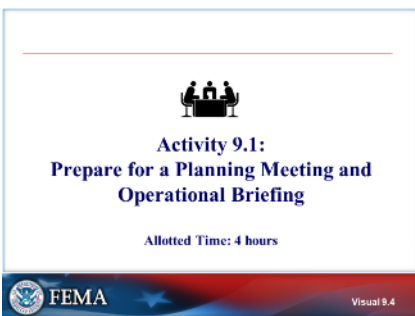
Visual 9.1



Visual 9.2



Visual 9.3



Visual 9.4

## UNIT 9: PLANNING MEETINGS & BRIEFINGS

The purpose of this unit is to provide students with an opportunity to practice creating maps and displays for the Planning Meeting and Operational Briefing.

### UNIT TERMINAL OBJECTIVE

Participate in a Planning Meeting and Operational Briefing.

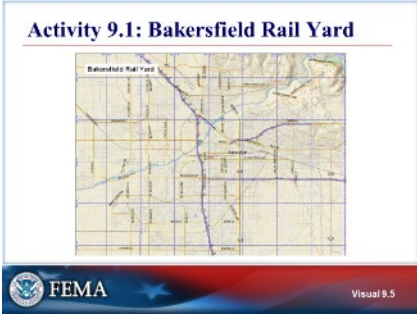
### UNIT ENABLING OBJECTIVES

- Describe the Planning Meetings and Operational Briefings.
- List the responsibilities of the Situation Unit Leader during the Planning Meetings.
- Create maps and prepare for an Incident Briefing.

### ACTIVITY 9.1: PREPARE FOR A PLANNING MEETING AND OPERATIONAL BRIEFING

The instructor will explain Activity 9.1.

You will have 4 hours to complete the activity, including small group interactions and presentations of each group's answers.



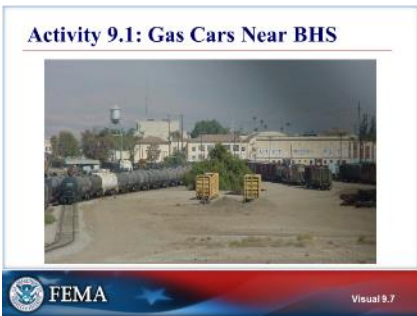
Visual 9.5

**ACTIVITY 9.1: BAKERSFIELD RAIL YARD**



Visual 9.6

**ACTIVITY 9.1: RAIL YARD**



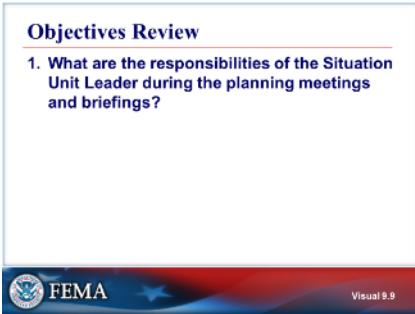
Visual 9.7

**ACTIVITY 9.1: GAS CARS NEAR BHS**



Visual 9.8

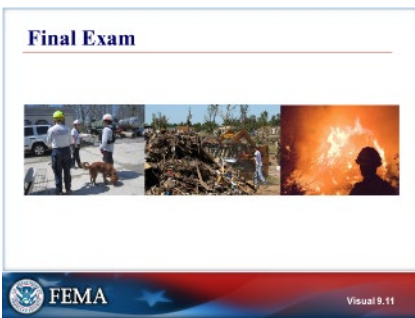
**ACTIVITY 9.1: RAILCAR BEHIND HOSPITAL**



Visual 9.9



Visual 9.10



Visual 9.11



## OBJECTIVES REVIEW

### Unit Enabling Objectives

- Describe the Planning Meetings and Operational Briefings.
- List the responsibilities of the Situation Unit Leader during the Planning Meetings.
- Create maps and prepare for an Incident Briefing.

## REVIEW COURSE EXPECTATIONS

**Conduct** a review of the students' expectations about the course that they generated on the first morning of class.

**Refer** to the easel charts sheets, if they have been saved.

**Ensure** that either students' expectations have been satisfied or they know where they can go for further information and training.

## FINAL EXAM

**Administer** the Final Exam.

**Instructor Note:** The Final Exam is closed-book. Students must pass with a 75% or higher.

**Allow** 1 hour to complete the test.

After all students have completed the Final Exam or 1 hour has passed (whichever comes first), **review** the Final Exam with the class by using the Instructor copy of the Final Exam (Answer Key) found in the Instructor Guide.

**Ask** students grade their own exams. Once all Final Exams have been corrected, **collect** them.

## END OF COURSE

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## **Supplemental Materials**

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## Activity 9.1: Prepare for a Planning Meeting and Operational Briefing

### Prepare for a Planning Meeting and Operational Briefing - Activity 9.1—Unit 9

#### Purpose

The purpose of this activity is to allow students to prepare the products for a simulated incident.

#### Objectives

Students will:

- Demonstrate the responsibilities of the Situation Unit Leader during a Planning Meeting.
- Demonstrate the ability to set up a Situation Unit.
- Demonstrate the capability to create maps and prepare information for an Operational Briefing.

#### Activity Structure

This scenario-based activity is scheduled to last approximately 4 hours, including small group interactions and presentations of each group's answers. The instructors will present a Transition Briefing and associated information on a simulated incident that the students' IMT is assuming command over. Students will gather in small groups having 30 minutes to prepare for the Planning Meeting and to set up their Situation Unit. After 30 minutes, students will engage in a simulated Planning Meeting. Once the Planning Meeting is complete, students will have 1 hour to prepare for the Operational Briefing, including creating all necessary IAP products. The facilitator will then lead the Operational Briefing.

#### Rules, Roles, and Responsibilities

Students will be divided into groups of 4–6. Each group will assume the role of Situation Unit Leader. Students respond to the situation based on their expert knowledge of response procedures, current information, and insights derived from training. **DO NOT DELVE INTO THE OPERATIONS ASPECT BUT UTILIZE THAT KNOWLEDGE TO HELP YOU AS A SITUATION UNIT LEADER.**

**Following are the specific activities and instructions for your participation in the activity:**

1. Given the information in the scenario:
  - Develop an organizational chart for the Situation Unit, and complete an ICS Form 213(s) for staff and material.
  - Develop the Situation Unit Map and the Planning Meeting Sketch Map.
2. Present your finding at the Planning Meeting.
3. Present your Situation Unit setup and ICS Form 213 General Message to the instructors after the Planning Meeting.
4. Review the information provided for the Operational Briefing. Given the information provided, create the maps and intelligence necessary for the Operational Briefing.
5. Present your findings at the Operational Briefing.

## Schedule

Activity Introduction and Overview	10 minutes	Classroom
Discussion/Documentation	3 hours	Small Groups
Debrief/Review	50 minutes	Classroom

## Incident Scenario

The Metropolitan Bakersfield community (located at USNG 11S LV 1597 1610 / latitude W 119° 1.55', longitude N 35° 22.3') has a population of approximately 400,000. The area is home to one of the nation's largest petrochemical industries and agricultural industries. Bakersfield lies in the Southern San Joaquin Valley a few miles east of the Sierra Nevada Mountains along the Kern River. Through Bakersfield the Kern River flows from the northeast to the southwest. The area is fairly flat with a slight slope to the river and to the southeast.

A major railroad switching yard is in the center of town. Along its north side is Mercy hospital, Bakersfield Police (BPD) HQ, City Hall, the Kern County Court House, and Kern County Administration along with downtown businesses. Along the south side is Bakersfield High School, with 4,000 students, high-density residential and businesses. Tracks from all directions converge, and there are a large number of railcars consistently parked at the station. The cars in the photos are mostly pressurized liquefied gas petrochemical tankers. There are pressurized liquefied gas cars parked within 300 yards northwest of the high school. All of the cars contain either chlorine or liquid petroleum gas.

Two C4 charges with cell phone detonators are attached to cars. One is attached near the bottom (liquid) of one CL car, and one is placed near the top (vapor) of a second adjacent car. If the liquid space is punctured it will result in a fast dumping of contents. If the vapor space is punctured, there will be a sudden burst, but then it will auto-refrigerate and slow down to a pulsing of vapor that will last for several days. This causes the formation of two clouds.

16:03 Charge goes off. School is letting out with 4,000 kids completely exposed, along with the rest of the community in that area. One car has a 2 x 2-inch hole near the top, and another has a 2 x 2-inch hole near the bottom. There is a visible cloud from the railroad and crews can see vapors. Many victims seen lying on sidewalks are presumed to be dead. Crews are confronted and overwhelmed by hundreds of walking wounded with severe respiratory injuries and moderate skin burns.

16:05 Police Chief assumes IC from Battalion 1. Battalion chiefs are reassigned to divisions. The County EOC notifies County IMT members and all respond.

16:19 The chlorine cloud is receding. The car with the hole in the bottom is empty, but the car with the vapor leak (hole in the top) is pulsing. There are numerous walking wounded. Some crews begin trying to rescue downed persons calling for help. Engines 1 and 2 are out of service due to exposure.

16:25 Kern County IMT with 25 members arrives. The IMT is advised to have an IAP by 1800 for an 1800 to 0800 shift. The Planning Section Chief states, "Due to the situation, we will combine the Tactical and Planning meeting at 1700."

The number assigned to this incident is CA-KRN-000265.

## **Sample ICS Form 209 – Bakersfield**

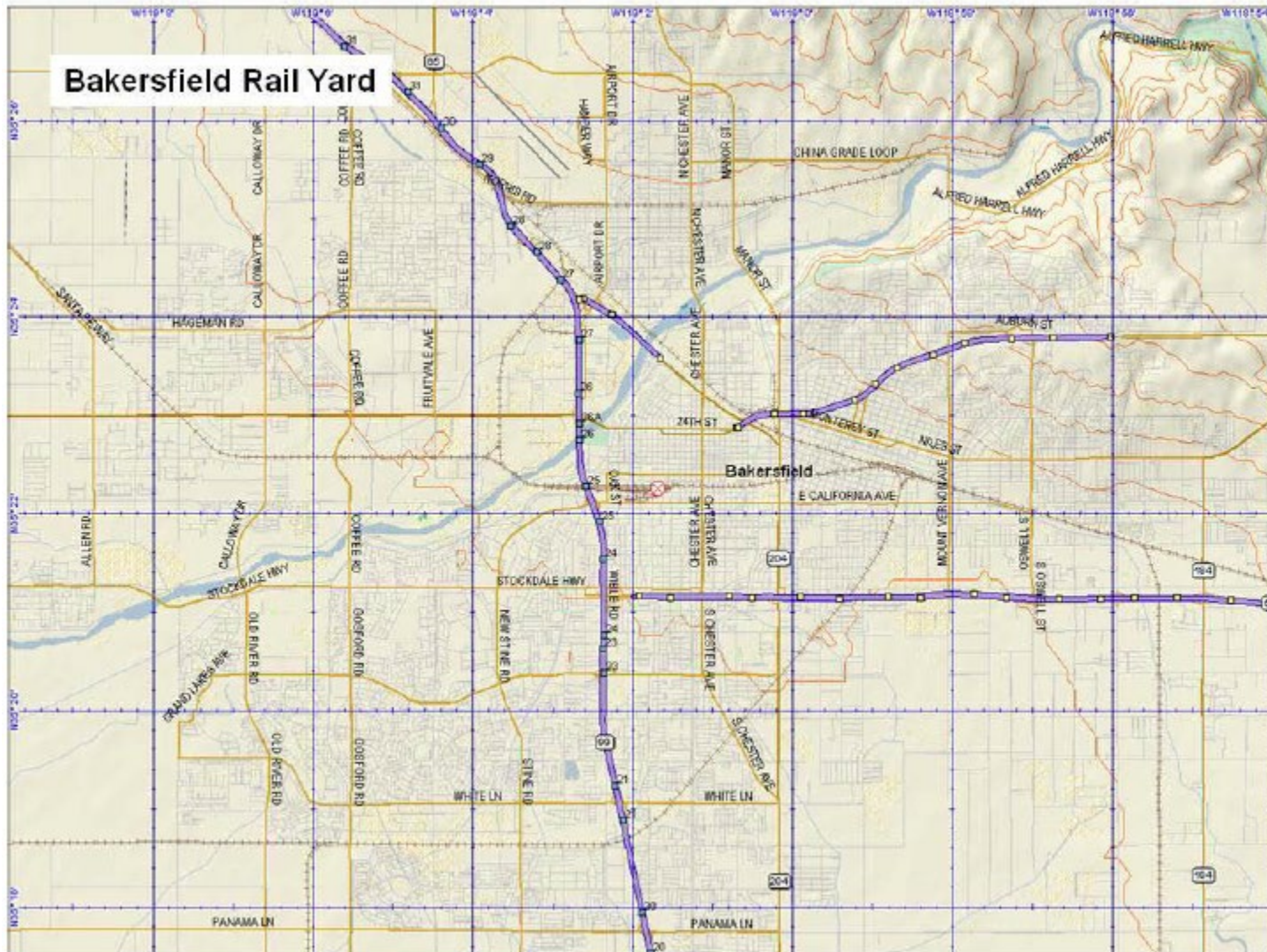
Students – Obtain a blank ICS Form 209 from the instructor or refer to the file below.

Refer to EL\_964\_ACT\_9.1\_ICs\_Form\_209\_1\_of\_2.pdf

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### Activity 9.1 Incident Pictures: Part 1



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## Activity 9.1 Incident Pictures: Part 1

# Rail Yard



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### Activity 9.1 Incident Pictures: Part 1

# Gas Cars Near BHS



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### Activity 9.1 Incident Pictures: Part 1

# Railcar Behind Hospital



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### **Activity 9.1 ICS Form 201: Part 1**

Refer to EL\_964\_ACT\_9.1\_ICs\_Form\_201.pdf

### **Activity 9.1 ICS Form 213: Part 1**

Refer to EL\_964\_ACT\_9.1\_ICs\_Form\_213\_1\_of\_2.pdf

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## Activity 9.1 Spot Forecast: Part 1

### Spot Forecast for the Bakersfield Incident

National Weather Service San Joaquin Valley

430 PM PST Mon Feb 23 2004

IF CONDITIONS BECOME UNREPRESENTATIVE,  
CONTACT THE NATIONAL WEATHER SERVICE.  
DISCUSSION...A HIGHPRESSURE RIDGE OVER THE SOUTHWEST U.S. IS  
BRINGING STABLE  
CONDITIONS TO SOUTHERN CALIFORNIA SO EXPECT RETURN OF FOG TO  
AREA TONIGHT.  
UPPER LEVEL TROUGH APPROACHING THE AREA WILL BRING TURN OF WINDS  
TO SOUTHWEST  
TUESDAY EVENING

FOR THIS EVENING AND TONIGHT

WEATHER.....FAIR SKIES EARLY THIS EVENING WITH FOG  
DEVELOPING BY AROUND 2100 AND LASTING  
THROUGH THE NIGHT.  
TEMPERATURE.....TEMPERATURES DROPPING INTO THE 40S AFTER  
1800 WITH MIN TEMPERATURES 37-40.  
HUMIDITY.....HUMIDITY CLIMBING ABOVE 80% AFTER ABOUT  
1800 WITH MAX HUMIDITY NEAR 100%  
WIND.....NORTHWEST TO 3 MPH AFTER ABOUT 1700  
DECREASING TO 1-2 MPH  
MIXING HEIGHT.....3000 FEET UNTIL ABOUT 1800 THEN DROPPING  
TO BELOW 100 FEE AGL.  
MIXING WINDS.....SOUTHWEST 2-4 MPH.

OUTLOOK FOR TUESDAY

WEATHER.....FOG AND LOW CLOUDS THROUGH ABOUT 1100  
THEN CLEARING.  
TEMPERATURE.....MAX 58-62.  
HUMIDITY.....MIN 60-64%  
WIND...EYE LEVEL...LIGHT NORTHWEST TO 4 MPH TURNING TO  
SOUTHEAST AFTER ABOUT 1600.  
MIXING HEIGHT.....UNDER 100 FEET AGL EARLY...RISING TO  
AROUND 4000 FEET AGL BY LATE AFTERNOON.  
MIXING WINDS.....SOUTHWEST 3-9 MPH TURNING TO NORTHWEST  
BY LATE AFTERNOON OR EVENING.

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### Activity 9.1 Situation Unit Map, Page 1 of 5: Part 1



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### Activity 9.1 Situation Unit Map, Page 2 of 5: Part 1



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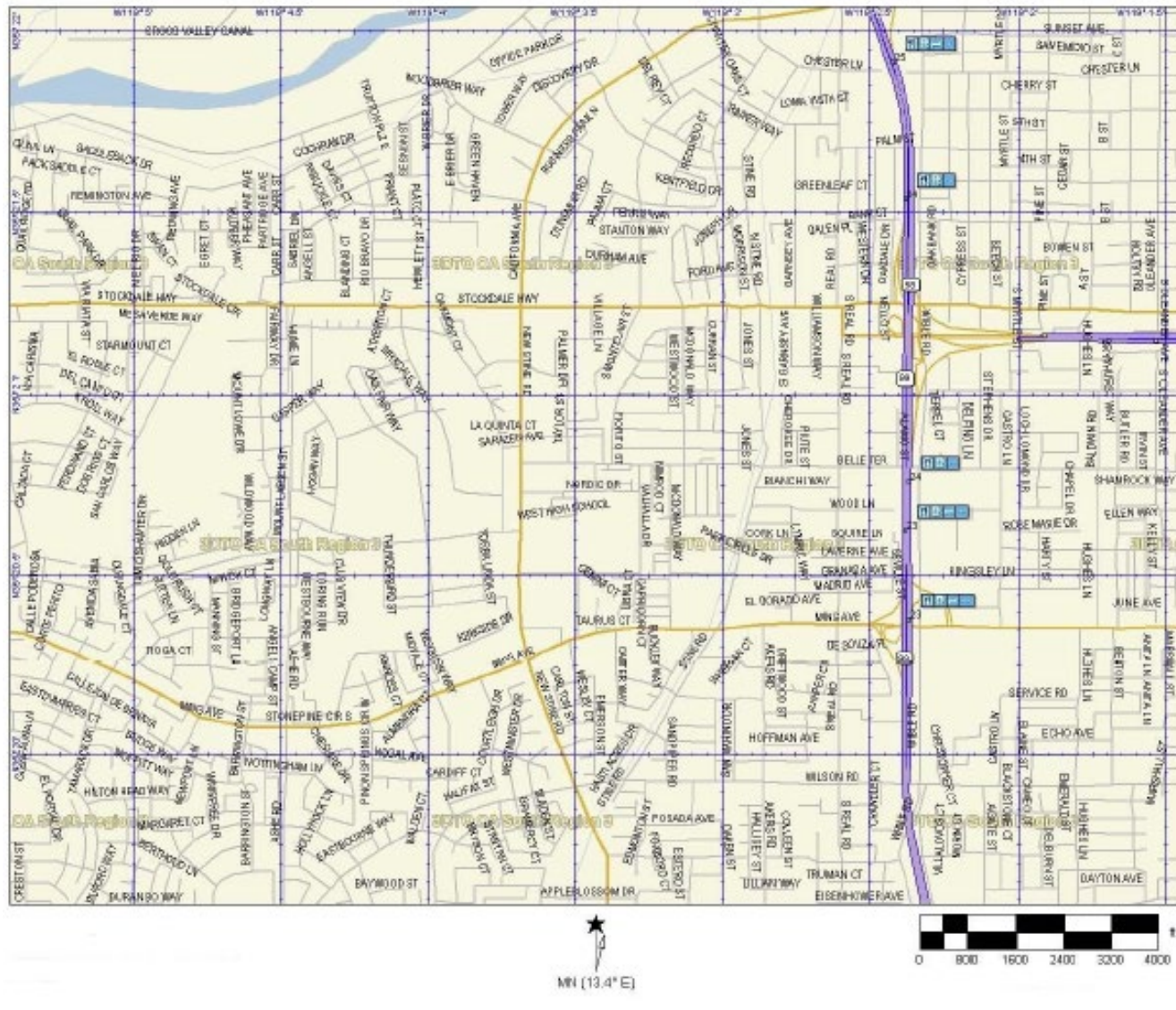


### Activity 9.1 Situation Unit Map, Page 3 of 5: Part 1



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### Activity 9.1 Situation Unit Map, Page 4 of 5: Part 1



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### Activity 9.1 Situation Unit Map, Page 5 of 5: Part 1



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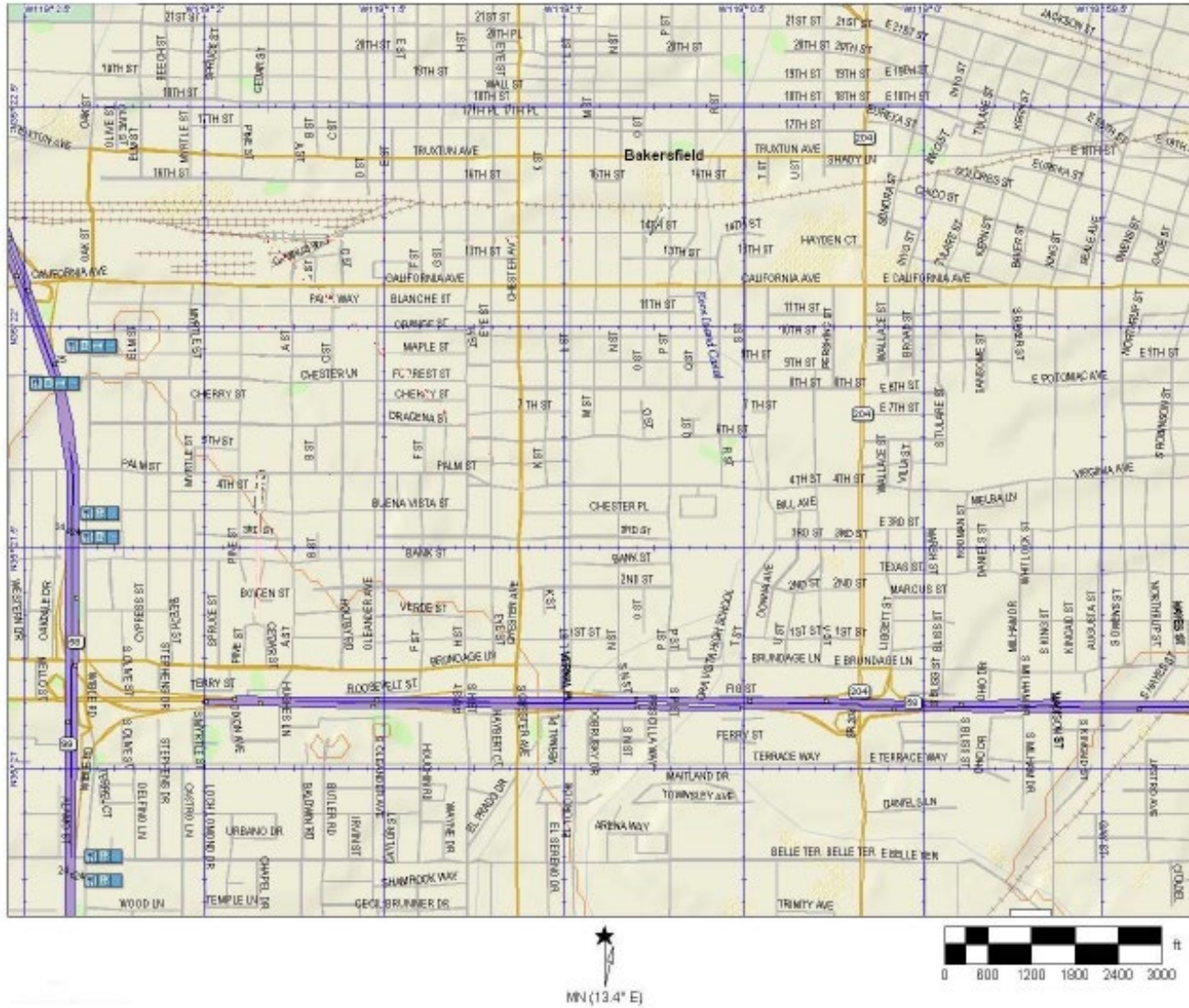
## **Activity 9.1 Blank ICS Form: Part 1**

Refer to EL\_964\_ACT\_9.1\_ICs\_Form\_213\_2\_of\_2.pdf

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### Activity 9.1 Bakersfield IAP Map: Part 2



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