UFC 4-010-23
15 July 2008

# UNIFIED FACILITIES CRITERIA (UFC)

# EMERGENCY OPERATIONS CENTER PLANNING AND DESIGN


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15 July 2008

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# EMERGENCY OPERATIONS CENTER PLANNING AND DESIGN



U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Record of Changes (changes are indicated by **1**\ ... /**1**/)

| Change No. | Date | Location |
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**This UFC supersedes: U.S. Navy Planning, Design, and Physical Security Measures for Emergency Command Centers Handbook, (no number), 31 May 1993**

# FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with USD(AT&L) Memorandum dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the more stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and Air Force Civil Engineer Support Agency (AFCESA) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: Criteria Change Request (CCR). The form is also accessible from the Internet sites listed below.

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- Whole Building Design Guide web site http://dod.wbdg.org/.

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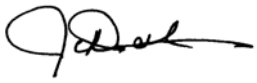

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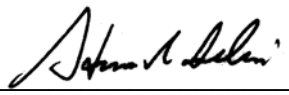

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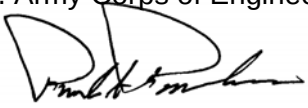

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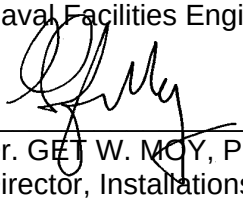

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# UNIFIED FACILITIES CRITERIA (UFC)
# NEW DOCUMENT SUMMARY SHEET

**Document:** UFC 4-010-23, *EMERGENCY OPERATIONS CENTER PLANNING AND DESIGN*

**Reasons for Document:** This UFC provides unified criteria for the design and construction of Emergency Operation Centers (EOC). This UFC provides:

- A formalized process for planning EOC spaces that all four services will utilize.
- Guidance on coordinating space layouts with operational and functional requirements.
- Implements Coordination with the Homeland Security Presidential Directive 5 (HSPD-5) and the National Response Plan .

**Impact:** There are negligible cost impacts.

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# CHAPTER 1

# INTRODUCTION AND OVERVIEW

1.1. **PURPOSE AND SCOPE.** This document presents a unified approach for the planning and design of Emergency Operation Centers (EOCs). This document is not intended to establish the requirement for an EOC or establish the operational procedures of an EOC. Commanders, security personnel, planners, designers, architects, and engineers should use this document when planning or designing an EOC. This UFC has been coordinated with the requirements of Homeland Security Presidential Directive 5 (HSPD-5).

1.2. **BACKGROUND.** In order to ensure complete preparedness under the full spectrum of threats, Regional Commanding Officers and Installation Commanders have been advised to establish an EOC. The EOC should integrate the disaster prevention, preparedness, response and recovery in a single all-discipline all-hazards response team.

1.3. **APPLICABILITY.** This UFC applies to all renovations and new construction of emergency operations centers within the Department of Defense. It is recommended for temporary and alternate EOC installations.

1.4. **DEFINITIONS.** Refer to Appendix A for definitions of terms used in this UFC.

1.5. **REFERENCES**. Refer to Appendix B for a list of references that provide information relevant to the planning of the EOC.

1.5.1 **Security Engineering UFC Series**. This UFC is one of a series of security engineering Unified Facilities Criteria documents that cover minimum standards, planning, preliminary design, and detailed design for security and antiterrorism. The manuals in this series are designed to be used sequentially by a diverse audience to facilitate development of projects throughout the design cycle. The manuals in this series include the following:

1.5.1.1 **DoD Minimum Antiterrorism Standards for Buildings**. UFC 4-010-01 and 4-010-02 establish standards that provide minimum levels of protection against terrorist attacks for the occupants of all DoD inhabited buildings. Those UFC are intended to be used by security and antiterrorism personnel and design teams to identify the minimum requirements that must be incorporated into the design of all new construction and major renovations of inhabited DoD buildings. They also include recommendations that should be, but are not required to be incorporated into all such buildings.

1.5.1.2 **Security Engineering Facilities Planning Manual.** UFC 4-020-01 presents processes for developing the design criteria necessary to incorporate security and antiterrorism into DoD facilities and for identifying the cost implications of applying

those design criteria. Those design criteria may be limited to the requirements of the minimum standards, or they may include protection of assets other than those addressed in the minimum standards (people), aggressor tactics that are not addressed in the minimum standards, or levels of protection beyond those required by the minimum standards. The cost implications for security and antiterrorism are addressed as cost increases over conventional construction for common construction types. The changes in construction represented by those cost increases are tabulated for reference, but they represent only representative construction that will meet the requirements of the design criteria. The manual also includes a means to assess the tradeoffs between cost and risk. The Security Engineering Facility Planning Manual is intended to be used by planners as well as security and antiterrorism personnel with support from planning team members.

1.5.1.3 **Security Engineering Facilities Design Manual.** UFC 4-020-02 provides interdisciplinary design guidance for developing preliminary systems of protective measures to implement the design criteria established using UFC 4-020-01. Those protective measures include building and site elements, equipment, and the supporting manpower and procedures necessary to make them all work as a system. The information in UFC 4-020-02 is in sufficient detail to support concept level project development, and as such can provide a good basis for a more detailed design. The manual also provides a process for assessing the impact of protective measures on risk. The primary audience for the Security Engineering Facility Design Manual is the design team, but it can also be used by security and antiterrorism personnel.

1.5.1.4 **Security Engineering Support Manuals.** In addition to the standards, planning, and design UFC mentioned above, there is a series of additional UFC that provide detailed design guidance for developing final designs based on the preliminary designs developed using UFC 4-020-02. These support manuals provide specialized, discipline specific design guidance. Some address specific tactics such as direct fire weapons, forced entry, or airborne contamination. Others address limited aspects of design such as resistance to progressive collapse or design of portions of buildings such as mailrooms. Still others address details of designs for specific protective measures such as vehicle barriers or fences. The Security Engineering Support Manuals are intended to be used by the design team during the development of final design packages.

# CHAPTER 2

# DESCRIPTION

2.1. **DEFINITION OF EMERGENCY OPERATIONS CENTER.** An emergency operations center is the protected site location where management decisions are made and coordinated responses are orchestrated related to an emergency incident. It is designed and equipped to provide staff support to commanding officers in coordinating and guiding response to emergency incidents. EOCs may be established at the regional or local installation level. EOC may range in size from dual use conference rooms to a complete stand alone facility.

2.1.1 **Mission** . The purpose of an EOC is to provide a Commander and his immediate staff a secure centralized location, with adequate communications for command and control during a disaster or emergency. The EOC normally includes the space, facilities and protection necessary for the following broad C4I functions:

2.1.1.1 **Command:** The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission.

2.1.1.2 **Control:** Coordination and control of operations including emergency planning and operations, and controlling the use of military and other resources.

2.1.1.3 **Communications:** Communications between the EOC and response personnel as well as the issuance of emergency information, warnings and instructions to military installation personnel and to the general public.

2.1.1.4 **Computers:** Computers help support the collection, analysis, display, dissemination and record keeping of information.

2.1.1.5 **Intelligence:** Intelligence is collected to help the incident manager and emergency planners determine what next step to take in mitigating the emergency.

2.1.2 **EMERGENCY INCIDENTS.** The design of the EOC depends to a great extent on the types of emergency incidents that could impact the military installation. In broad terms, possible incidents are described as follows.

2.1.2.1 **Naturally occurring hazards**. Hazards that can occur without the influence of people and have potential direct or indirect impact on people, property, the environment, such as the following:

- **Geological hazards** such as earthquakes, tsunami, volcanoes, landslides, and mudslides.
- **Meteorological hazards** such as floods, flash floods, droughts, fires, snow, windstorms, tropical cyclone, hurricanes, tornadoes extreme temperatures, and lightning strikes.
- **Biological hazards** Emerging diseases that impact humans or animals such as plague, smallpox, anthrax, West Nile virus, foot and mouth disease, SARS, pandemic disease, and Mad Cow Disease.

2.1.2.2 **Human-caused events. -** Human-caused events can be either accidental or intentional.

2.1.2.2.1 **Accidental events.** Accidental events are events such as the following:

- Hazardous material (explosive, flammable liquid, flammable gas, flammable solid, oxidizer, poison, radiological, corrosive) spill or release
- Explosion/fire
- Transportation accident
- Building/structure collapse
- Energy/power/utility failure
- Fuel/resource shortage
- Air/water pollution, contamination
- Water control (structure/dam/levee failure)

2.1.2.2.2 **Intentional events.** Intentional events are events such as the following:

- Terrorism (explosive, chemical, biological, radiological, nuclear, cyber)
- Sabotage
- Civil disturbance (public unrest, mass hysteria, riot)
- Enemy attack, war
- Strike or labor dispute
- Criminal activity (vandalism, arson, theft, fraud, embezzlement, data theft)
- Electromagnetic pulse

2.1.2.3 **Significant events** and designated special events such as ceremonies, public speeches by significant individuals, large sporting events, or summit conferences.

2.1.3 **EOC Size**. An EOC can range in scope from an activated conference room through a multiple space center located in general building to a stand alone specialized facility.

2.1.4 **Integration with Military War Command**. Determination of multiple functions for EOC facilities, where the EOC is used for non-EOC functions when the EOC is not activated in response to an incident, will be determined by individual military branches. In some instances, the EOC function may be provided by the war command center, with added functions necessary for response to emergency incidents. Alternatively, the EOC may be a separate center, with delegated command to the senior officer at the EOC. EOC's that are separate and subordinate to a war command center need direct communication and physical proximity to the war command center.

2.1.5 **Basic Functions**. Basic Functions of the EOC may include the following.

- Receive, monitor, and assess disaster information.
- Receive, assess, and track available resources.
- Operate a message center to log and post all key disaster information.

- Conduct preliminary damage assessment and maintain documentation on extent of damage.
- Make policy decisions and proclaim local emergencies as needed.
- Provide direction and control for EOC operations, set priorities and establish strategies.
- Provide direction for recovery assistance missions in response to the situations and available resources.
- Keep senior, subordinate and tenant commands informed.
- Keep local jurisdictions (City, County and State) informed.
- Develop and disseminate public information warnings and instructions.
- Provide information to the news media.
- Execute tactical operations to implement policy, strategies and missions, and monitor and adjust tactical operations as necessary.
- Assess needs and coordinate evacuation and shelter operations.
- Monitor, assess, and track response units and resource requests.
- Coordinate operations of all responding units, including law enforcement, fire, medical, logistics, and coroner.
- Organize staging area and assignments for volunteer personnel.
- Augment radio communication from EOC to any field operation when appropriate.
- Maintain EOC security and access control.
- Provide for relief and necessities of response for EOC personnel.

## 2.2. FEDERAL AND DOD POLICIES AND PLANS

### 2.2.1 Federal Emergency Response Plans.

2.2.1.1 The EOC should provide services as mandated by the National Response Plan and Mass Migration Emergency Plan (Distant Shore).

2.2.2 **Emergency Planning & Community Right to Know Act.** The EOC should comply with the relevant requirements applicable to the military in its relationship to adjacent communities.

2.2.2.1 Governors of each state are required to establish state emergency response committees (SERC).

2.2.2.1 The SERC should designate local emergency response committees (LERC). Each committee shall include representatives from elected state and local officials; law enforcement, civil defense, firefighting, first aid, health, local environmental, hospital, and transportation personnel; broadcast and print media; community groups;

and owners and operators of facilities subject to the requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA).[1]

2.2.3 National Oil and Hazardous Substances Pollution Contingency Plan (NCP)[2].

2.2.3.1 The NCP establishes the National Response Center (NRC). Oil spills, gas and hazardous liquid pipeline releases, chemical releases and radiological releases must be reported to the NRC by responsible parties as required by Federal laws including Section 311(b)(5) of the Federal Water Pollution Control Act, Section 306(a) of the Outer Continental Shelf Lands Act Amendments of 1978, Section 16(b) of the Deepwater Ports Act of 1974, the Comprehensive Environmental Response, Compensation, and Liability Act, 49 CFR 171.15, 49 CFR 195.52, and 49 CFR 191.

2.2.3.2 The Department of Defense, as a member of the National Response Team (NRT) and Regional Response Team (RRT), as enabled in 40 CFR 300.120, provides services and technical expertise for responding to incidents under the NRT's jurisdiction. Under the NRT, the DOD provides Federal On-Scene Coordinators for hazardous substance pollution incidents at their facilities or under their jurisdiction.

2.2.4 Department of Homeland Security (DHS) National Response Framwork (NRF).

2.2.4.1 The ***National Response Plan*** implements the domestic incident management authorities, roles and responsibilities of the Secretary of Homeland Security as defined in Homeland Security Presidential Directive-5 (HSPD-5), Management of Domestic Incidents. This document provides guidance on Federal coordinating structures and processes for domestic incident management and the ***National Incident Management System (NIMS)***[3], as required by HSPD-5. It is applicable to domestic incident management in the context of terrorist attacks, major disasters and other emergencies.[4]

2.2.4.2 The National Operations Center (NOC) is the primary national-level hub for operational communications and information pertaining to domestic incident management. The NOC integrates and provides overall steady state threat monitoring and situational awareness for domestic incident management on a 24/7 basis.[5] Federal Departments and Agencies are required by the NRF to designate representatives to staff the NOC at the request of the Secretary of Homeland Security.[6]

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[1] 40 CFR 116 Section 11001

[2] National Oil and Hazardous Substances Pollution Contingency Plan, Revised Rule, Office of Environmental Policy and Assistance, October 17, 1994

[3] National Incident Response Plan 9.0, U.S. Department of Homeland Security

[4] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section I, Pg 1

[5] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section III, Pg 24

[6] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section IV, Pg 24

2.2.4.3 To facilitate national-level domestic incident management and coordination of Federal operations and resources when any of the criteria identified above is met or in anticipation thereof, the Secretary of Homeland Security may activate a tailorable, task-organized headquarters-level Interagency Incident Management Group (IIMG) comprising senior representatives from Federal departments and agencies and nongovernmental organizations, as required. [7] Federal Departments and Agencies are required by the NRF to designate representatives to staff the IIMG at the request of the Secretary of Homeland Security.[8]

2.2.4.4 Federal Departments and Agencies are required by the NRF to report to the NOC, according to procedures established by the Secretary of Homeland Security: This may be accomplished at the service level rather than the base or military installation level.

- The initiation of a Federal department or agency plan or action to prevent, respond to or recover from an incident for which a department or agency has responsibility under law or directive under the criteria established in HSPD-5;
- The submission of requests for assistance to or receipt of a request from another Federal department or agency in the context of domestic incident under the criteria established in HSPD-5; and
- The receipt of requests for assistance from state, local or tribal governments; nongovernmental organizations; or the private sector under the criteria established in HSPD-5.[9]

2.2.4.5 Federal entities will be integrated into a Joint Field Office (JFO). The JFO will be collocated with an emergency operations center. Ensure that adequate connectivity is maintained between the JFO and the NOC and regional EOCs.[10]

2.2.5 **Navy Policy and Instructions**

2.2.5.1 SECNAVINST 3400.4 CBRNE Response Guidelines.

2.2.5.2 OPNAVINST 3440.17 Navy Installation Emergency Management Program

2.2.5.3 OPNAVINST 5530.14.D “Navy Physical Security and Law Enforcement Manual

2.2.6 **Army Policy and Requirements.**

2.2.6.1 Department of the Army EP 500-1-1 Civil Emergency Management Programs-Procedures

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[7] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section IV, Pg 22

[8] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section IV, Pg 22

[9] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section IV, Pg 26

[10] National Response Plan, U.S. Department of Homeland Security, December, 2004, Section IV, Pg 16

2.2.7 **Air Force Policy and Requirements.**

2.2.7.1 Command Post Air Force Instruction 10-207, 16 May 2003

2.2.7.2 Air Force Instruction 10-2501 Air Force Emergency Management Program Planning and Operations

2.2.8 **DoD Policy and Requirements**

2.2.8.1 DoD 2000.18 Installation CBRNE Emergency Response Guidelines

2.2.8.2 JP 3-41 Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Consequence Management

2.3. **ORGANIZING THE EOC**

2.3.1 **Methods of Organizing the EOC.** The National Incident Management System (NIMS) provides an incident command structure which is a method for organizing an EOC. Within the incident command structure, emergency support functions are established which focus on specific areas of responsibility. Each branch of the military has policies that define the organization and staffing of the EOC. These policies define the title of the EOC, the responsibilities and functions of the EOC, organization of the EOC and staff positions assigned to the EOC are present when the EOC is fully operational. All activity within the EOC should be coordinated by an executive, usually the EOC Director or Emergency Management Director.

2.3.1.1 **Air Force.** Air Force Instruction 10-2501 Air Force Emergency Management Program Planning and Operations.

2.3.1.2 **Army.** Department of the Army EP 500-1-1 Civil Emergency Management Programs-Procedures.

2.3.2 **Navy and Marine Corps.** CNIC Instruction 3440.17: Navy Installation Emergency Management (Em) Program Manual and OPNAVINST 3440.17 Navy Installation Emergency Management Program.

2.3.3 **Concept of Operations**. The EOC will operate under three primary conditions: ***normalcy***, when no emergency incident exist sufficient to warrant full activation of the EOC; ***emergency without warning***, when an incident occurs requiring full activation of the EOC in response to the incident; and ***emergency with warning***, when the EOC is brought into full or partial activation to preemptively reduce the impact of impending incidents, and respond to the impact of the incident when it transpires.

2.3.4 **Limitations as Emergency Shelter.** During an emergency, the staff may be required to be on duty for extended stays. The EOC is, in itself, not intended to be an emergency shelter and may not provide protection against extreme event hazards (i.e. extreme weather events). While it should be designed to provide habitable space while subject to emergency situations, full shelter protection and long-term survival provisions should be provided from a designated shelter location for the general public.

2.4. **EOC STAFFING CONSIDERATIONS**

**Staffing.** The size and structure of the EOC will be primarily driven by the number of people required to carry out the EOC functions during an emergency. The

number of staff will be driven by the functions that the EOC is responsible for and the size of the military installation that the EOC serves. The size of EOC's may vary from dual-use conference rooms to full independent facilities.

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# CHAPTER 3

# GENERAL PLANNING REQUIREMENTS

## 3.1 GENERAL REQUIREMENTS

3.1.1. General Requirements for an EOC include the following:

3.1.1.1. Constructed and located to provide balanced protection of assets against emergency incidents that can impact the facility.

3.1.1.2. Sufficient in size to accommodate the required staff members that may be present for a given situation as determined by the commander.

3.1.1.3. Centrally located and away from the activity perimeter so that movement to and from the center is screened from public view.

3.1.1.4. Constructed so that assigned personnel can operate without being observed.

3.1.1.5. Protection or self containment of power supply, water supply, sanitary facilities, heating, ventilation, air-conditioning, food service and rations, and billeting for a limited period as the EOC is not intended to be an emergency shelter. The period that each service must have reserve or backup capacity is determined by the concept of operations of the EOC.

3.1.1.6. Capable of immediate activation with all equipment, furnishings and supplies immediately at hand.

3.1.1.7. Complete capability on all communications mediums including telephone, radio and data communications.

3.1.1.8. Secure with controlled access.

## 3.2 PLANNING PROCESS.

3.2.1. The planning for an EOC should address the following planning steps:

3.2.1.1. Define the *services provided by* the EOC based on the mission of the EOC and continuity of operations requirements. During this phase, determine what services happen only during emergencies, other special conditions requiring full activation of the EOC, and services that will be performed by the EOC on an ongoing basis. How these services are executed is determined by the staff and operational requirements survey that are to follow.

3.2.1.2. Coordinate with the Commanding Officer, who will determine the staff position types and staffing levels necessary to perform various services of the EOC. The planning for an EOC should consider the types and number of personnel essential to the effective direction and control functions. This planning will be accomplished within the organizational framework of each military service.

3.2.1.3. Perform a complete *EOC operational requirements survey*. This should be performed regardless of the current existence of an EOC. The information obtained in this survey will provide the basis for

which decisions are made on the location, relocation, building selection or construction site of the EOC. The requirements survey should identify all activities that will be performed by the individual staff of the EOC, and the resources necessary for execution of those activities.

3.2.1.4. **Space Requirements.** Based on the staff and detailed survey of requirements, determine the space required for the EOC. Consideration should be given to circulation and construction layout requirements, expansion requirements, flexible use of space and space needs for ongoing operations during renovation or expansion of existing facilities. The actual space needed may vary between incidents, therefore, the commander must approve the extent of operations to be supported by the space. Guidance for space requirements of the EOC or operations supported by the EOC are contained in the following standards for military EOC facilities:

- **Air Force.** For the EOC see Air Force Instruction 10-2501 Air Force Emergency Management Program Planning and Operations. For the Installation Command Center (ICC) see the ICC Enabling Concept and Command Post Air Force Instruction 10-207 Supplement 1 provides basic equipment, space and staffing requirements for MAJCOM centers.
- **Navy.** Facility planning criteria for Navy and Marine Corps Shore Installations specifies that facility category code 143-65 OPERATIONS CONTROL CENTER for FLEET OPERATIONS shall be used for planning a command and control center.
- **Army.** ER 500-1-1 Civil Emergency Management Program, Chapter 3 provides space and operational requirements for the EOC.

3.2.2 **Risk Analysis.** To plan an EOC, an analysis of the types of threats that the EOC may face may be performed. When performing an analysis, consider a full spectrum of threats and vulnerabilities for the facility. Possible threats to the security, safety, occupant health and operation of an installation, as well as to adjacent communities, may vary considerably depending on the EOC's location and mission. Each command has the responsibility to determine the threats it faces. The UFC 4-020-01 DoD Security Engineering Facilities Planning Manual provides guidance on performing analysis for security related threats[11]. The threat analysis should not only determine the likelihood and scale of an event, but the duration as well.

3.2.2.1 The *Risk Analysis* for security related incidents must be performed in accordance with the 10 step process described in UFC 4-020-01. The assessment must determine the threat severity level, level of protection and balanced risk level.

- Antiterrorism. Utilize UFC 4-010-01 to determine the minimum Antiterrorism standards and level of protection for an EOC. The need for higher levels of protection shall be based on security engineer risk analysis as defined in UFC 4-020-01.

[11] UFC 4-020-01 DoD Security Engineering Facilities Planning Manual, Chapter 3 Design Criteria Development, part 3-1.4.2 Risk Analysis Procedure.

- Security Planning. Security level planning impacts and PSE equipment planning issues shall be based on security engineer risk analysis as defined in UFC 4-020-01.

3.2.2.2 Protection from certain natural threats such as flood, earthquake, snow, wind and fire are addressed by the building code criteria adopted in the *UFC 1-200-01.* When applying these criteria, an EOC would typically be designated as an "essential" facility, which corresponds to a "Category" IV, or a "Seismic Use Group" III. For the special case where the operations of an EOC has no potential redundancy or cannot be relocated to an alternate location, and **must** remain operational for the extreme earthquake, wind, or snow event, the facility should be considered as a "national strategic asset' corresponding to a "Category" V, or a "Seismic Use Group IV, as defined by UFC 3-310-01, *Structural Load Data*.

3.2.2.3 The level of risk determined for the facility should take a balanced approach. Achieving protection levels to eliminate all risk is not required. EOC operations may be relocated to alternate EOC facility locations, and do not need to be designed to withstand the severest threats.

3.2.2.4 Threats fall into five major categories. These threats should not be considered mutually exclusive, as one type may trigger additional incidents. In broad terms, possible incidents are described as follows.

3.2.2.5 **Natural Disasters** such as floods and tidal surges, earthquakes and seismic risks, landslides, mudflows, tsunami, hurricanes, tornadoes, severe thunderstorms, blizzards and winter storms, droughts, heat waves, wild fires, epidemics and volcanoes. These threats are not specifically addressed by UFC 4-020-01.

3.2.2.6 **Accidents** such as chemical spills, industrial accidents, radiological or nuclear incidents and fallout, fires, explosions, and utility outages. These threats are not specifically addressed by UFC 4-020-01. Planning for assessing the threat severity level of these threats should reference the following information.

3.2.2.8 **Civil or political incidents** such as mass migrations, the domestic effects of war, nation-state attacks, and unrest or disorder resulting from riots, public demonstrations and strikes. Not all of these threats are addressed by UFC 4-020-01. For information, contact the Department of State, the Federal Bureau of Investigation and the Central Intelligence Agency.

3.2.2.9 **Terrorist or criminal incidents** such as chemical, biological, radiological, nuclear, explosive, and cyber attack. For information contact the Department of Homeland Security.

3.2.2.10 **Significant events** and designated special events such as ceremonies, public speeches by significant individuals, large sporting events, or summit conferences. These threats are not specifically addressed by UFC 4-020-01.

3.3 **EOC SIZE.** Consideration that can impact the size of the EOC and include budget limitations, available space, other non-EOC functions that must also be accommodated as well as the anticipated staff levels. This UFC applies to EOC's of all different sizes. EOCs can range in size from a single conference room that is converted

to a EOC during emergency situations to dedicated facilities with full time staff on duty 24 hours each day. Consideration should be given to allowing the EOC to expand into adjacent building areas if the scale of the emergency situation requires a larger response team than anticipated by the allocated area.

3.4 **DUAL USE OF EOC SPACE WITH OTHER FUNCTIONS** The EOC may have dual uses during non-emergency conditions, provided that the EOC can be rapidly converted to accommodate the EOC functions necessary to respond to the emergency incident. The dual uses should be related to emergency management and communications. Consideration should be given to accommodating the dual functions during extended emergency conditions. When shared, the EOC spaces should be designated and marked as belonging to the EOC and be available for immediate use by the EOC, with procedures established for priority use during emergency incidents.

3.5 **DETERMINING FACILITY LOCATION (PRIMARY AND ALTERNATE).** The location of the EOC should be near the center of the military installation near the administrative offices and other emergency services such as fire response and medical services. This allows prompt response for commanders, support personnel, and emergency response team members. The administrative offices of the EOC management should be located in the EOC. Offices of the base commander should be nearby. Assure that all EOC team members have rapid access to the EOC. Also, identify where supplemental EOC staff resources may be called from, and if the EOC location will also allow them to respond in a timely manner. Such a location and the day-by-day use of the EOC help ensure immediate availability of key personnel and communications.

3.5.1 **Site Evaluation.**

3.5.1.1 A site development plan shall be used to locate the EOC. The plan should take into consideration the following conditions and requirements:

- Natural topography and geological features.
- Existing cultural, historical and archaeological resources.
- Indigenous plant and animal species.
- Health, safety and environmental protection requirements.
- Air quality impacts (e.g. contaminated outdoor air, emissions from nearby sources, soil gases, windborn dust and odors from industrial processes).
- Existing and planned support and service facilities including utilities, roads and parking.
- Interrelationship between facilities and aesthetic compatibility.
- Energy conservation requirements.
- Building code and zoning requirements.

3.5.1.2 If a risk area is identified, the EOC should be located as far from the area of highest risk. Examples include locating an EOC away from major fault lines, flood surge zones, flood plains, dam inundation zones, fire pathways, central areas subject to

conflagration, avalanche paths, areas of unstable soil, hazardous material storage, downwind of hazardous gas processing and storage facilities, nuclear plants or toxic waste storage or transportation pathways, flight approach paths, and railways that transport chemicals or pressurized gas. If the location options place the EOC within a zone of the a hazard source, the Explosive Safety Quantity Distance (ESQD) arc, or within a prescribed 10 mile radius of nuclear power plants Emergency Planning zone, determine the level of mitigation that may be required in response to the hazard. Locate the EOC a safe distance from known hazardous materials. Appropriate safety zones are defined for materials in the Emergency Response Guidebook (ERG2000).

3.5.1.3 For new building construction, first floor elevation shall be set at 500 year flood elevation. For existing buildings or renovated buildings, first floor elevation is required to be set at 100 year flood elevation, but is recommended to be set at 500 year flood elevation.

3.5.1.4 Identify the location of all utilities, including underground and overhead lines for electrical power, water supply, sewer, gas or petroleum lines, communications lines and towers and other utilities that may be in the planning zone.

3.5.1.5 Assure that the EOC is located in an area where it can be secured. Identify site perimeter, perimeter barriers and fences, control gates and other means of securing site perimeters.

3.5.1.6 The EOC should not be exposed to overhanging trees or forest from which wind-blown debris can strike the EOC. Debris and dust can damage the EOC or equipment essential to the EOC such as antennas and HVAC or generator motor filter systems.

3.5.1.7 Soil bores should be made to determine subgrade conditions that could impact EOC survivability in a disaster incident.

3.5.1.8 Identify where the command administration is located, and access for military command personnel to the EOC.

3.5.1.9 Identify the location of emergency response and support services including law enforcement, fire, medical, transportation, public works and engineering support, munitions range control and other relevant support services.

3.5.1.10 The EOC should be located near the center of the military installation to allow as fast a response as possible and afford better control, easier access for EOC personnel and greater accessibility for operational forces.

3.5.1.11 The EOC should not be located where congestion can hinder access. It should not be contiguous to other facilities that could impair the functioning of the EOC.

3.5.1.12 Avoid locations that can have impaired access caused by collapsing bridges, damaged or flooded roadways, blocked rail crossings, or other man-made or natural impairments to access.

3.5.1.13 Locate the EOC where radio and other communication systems can operate most advantageously and have the most coverage. Locate away from radio interference such as power lines and tall metal structures.

3.5.1.14 Verify that the site has adequate area for the EOC building, required setbacks and parking. Determine the type of parking available (surface versus garage) and if the parking can be secured.

3.5.1.15 Evaluate if the site must accommodate helicopter access.

3.5.1.16 Identify the nearest active commercial, private and military airports, and flight paths in relationship to the EOC site.

3.5.1.17 The site should be easily and quickly securable in the event of an emergency. This includes not only protection of the staff and building, but protection of the communications, utility services and transportation services to the site.

3.5.2 **Location within a Building.** First consideration should be given to subgrade locations, where the EOC is protected from blast, wind-borne debris, windstorms and other hazards. Special caution should be given whenever proposed EOC locations are proposed on upper floors of structures. Access can be hindered with elevators out of commission and egress stairs compromised. Upper floors may be more susceptible to windstorm damage. Coordinate EOCs in subgrade locations with paragraph titled, “Site Evaluation.”

3.5.2.1 Verify that facilities selected for EOC use have the area to create large operations rooms and communications rooms and additional area necessary for support spaces. Verify that the facility has or can accept the infrastructure to support the protection, cabling and environmental control necessary in the EOC. Verify that the exterior envelope is or can be upgraded to the necessary protection levels for the EOC.

3.5.2.2 Consider possible expansion requirements when locating the EOC.

3.5.2.3 If the proposed facility will also be occupied by other functions, review the compatibility of those functions with the EOC. Determine if increased security, necessary for the EOC during full operations, impairs the functions of other tenants.

3.5.2.4 When locating EOCs in sub-grade building areas, consider sub-grade water. While designs may be contrived to withstand groundwater pressure during normal times, damage to EOC sub-grade structures can allow water under pressure from bomb or earthquake shock, liquification or flooding to enter into the EOC.

3.5.2.5 The EOC should not be located in a high-rise building or next to a high-rise building that can collapse.

3.5.3 **Site for Alternate EOC.** In addition to the primary EOC, an alternative location should also be planned in the event that the primary EOC cannot perform its function. The alternate EOC becomes the primary command and control point when the primary EOC is disabled. The secondary site should be prepared and capable of immediate activation, along with relocation plans for moving staff and essential items such as secure documents to the alternative site. The alternate site should be selected to minimize, to the extent possible, the degree that the major hazards impacting the primary EOC affect the alternate site.

3.5.3.1 Consider the relationship of the alternate EOC to the military installation administrative centers and emergency services. Consider the accessibility of the site by

the emergency operations team. While the alternate EOC should be at a different location to avoid both centers being disabled by the same event, access for staff from their normal duty posts is an essential concern.

3.5.3.2 Consider placing the alternate EOC at a site served by different roadways than the primary EOC. Particular attention should be given to access routes that could be blocked by flooding, rail lines, traffic congestion, or other features that can be circumvented by the alternate site.

3.5.3.3 The alternate EOC should be on a separate power grid from the primary EOC.

3.5.3.4 Verify that the alternate EOC has adequate parking.

3.6.3.5 If the alternative EOC has a dual use function, determine how the resident function will be performed during an incident. Verify if the resident function will be suspended during EOC use of the alternative facility.

3.5.3.6 In general, criteria that applies to the primary EOC will apply to the alternate EOC.

3.6 **NEW VERSUS EXISTING LOCATIONS.** The first consideration in establishing an EOC should be the use or appropriate modification of space in an existing structure. EOCs do not need to be in stand-alone facilities and do not necessarily need to be located in a building exclusively designated for emergency operations. If the military plans on constructing a new facility for other purposes such as administration, law enforcement, health or fire response services, consider incorporating modifications to facilitate an EOC.

3.6.1 **Renovation of Existing Building Factors.** The placement of an EOC facility should consider the following characteristics of an existing facility before acceptance of that facility as a location.

- Adequacy of space and ability to reconfigure space for EOC purposes.
- Seismic risk and ability to upgrade structural systems to meet current codes including progressive collapse avoidance when required by UFC 4-010-01.
- Emergency power (when required)
- Adequate headroom clearance for all raised floor areas. Dais and raised floor areas should have a minimum of 2440 mm (8 feet) head clearance, but 12 to 14 feet is preferred to allow large displays. The area below the raised floor must not be used as an air distribution plenum to avoid the need for plenum rated cables. Follow requirements for plenums in UFC 3-600-01, Design: Fire Protection Engineering for Facilities.

3.6.2 **New Building Construction.** If there is no space that is available or meets the risk factors identified for the EOC, a new structure should be considered. The EOC can be incorporated into a multipurpose military facility, or created as a stand-alone facility.

## 3.7 SECURITY CONCEPTS.

3.7.1 **Controlled Access Area**. The operations area of the EOC should be designed as a controlled access area. The area must have a continuous secure perimeter. The number of egress points must be kept to the building code mandated minimum.

3.7.2 **Survivability.** To serve the military, the EOC should survive an emergency incident. Therefore, protection should be an integral part of planning, building (or modifying) and equipping an EOC. Securing the building and its staff against a wide variety of conditions will require close examination of its basic location, structural integrity, security procedures, and contingency plans to transfer EOC function at alternate locations. All equipment should be installed with security in mind.

3.7.3 **Scalable Security.** Based on the *Risk Analysis*, provide security features commensurate with the threat severity levels faced by the facility and the level of acceptable risk. Provide capability for the EOC to increase security levels during incidents based on the threats relative to the incident. Security can be temporarily increased through additional barriers, additional surveillance, supervision, and activation of protection systems during critical operations.

## 3.8 ALTERNATE EOC REQUIREMENTS.

3.8.1 Alternate EOCs will normally be a secondary function of the space selected, with the space converted to EOC purposes if the primary EOC cannot function. Alternate EOCs will need to be equipped to perform the same basic capabilities as the primary EOC, but may not require a complete set of features.

3.8.1.1 The alternate EOC should be capable of accommodating the same security levels as the primary EOC. The alternate EOC should be capable of performing the same communications functions as the primary EOC. The alternate EOC should consider the same site selection criteria as the primary EOC.

3.8.1.2 A separate Risk Analysis should be performed for the alternate EOC. This assessment will determine the level of protection required for the alternate EOC, which may be different than the primary EOC location. The Risk Analysis should consider the different asset value of the alternate facility and the likelihood of the alternate location being impacted by the same incident in determining the level of protection and acceptable level of risk for the alternate location.

3.8.1.3 Protection of alternate EOC locations and protection of relocation activities during transition from primary to alternate EOC should be provided. The key staff and necessary items should be moved as quickly and securely as possible. A mobile unit used for relocation can enhance the security of the move. For alternate EOC sites, the security systems may be monitored from a remote position location when the alternate EOC is not activated.

3.8.1.4 The requirements for structural, building envelope, interior construction, mechanical systems, electrical systems, water sources, life safety, shock mounting, security and communications distribution may be adjusted to reflect the level of threat severity level and functional capability determined necessary for the alternative EOC.

## 3.9 MOBILE COMMAND CENTERS.

3.9.1 Mobile Command Centers provide for continuous command and control capability during periods when the primary or alternative EOC will not be in operation, such as when emergency teams are transferring between a primary and alternate EOC. The Mobile Command Center also provides capability to provide command and control for localized field operations and therefore equipment should be interoperable with the primary and secondary EOC. See Appendix C for additional information on Mobile Command Center.

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# CHAPTER 4

# PHYSICAL LAYOUT

## 4.1 SITE ACCESSIBILITY, BUILDING SECURITY AND TRANSPORTATION SYSTEMS

### 4.1.1. Public Notification Signage.

4.1.1.1. Signage is required on the access road to provide direction to emergency responders and service providers as to the location of the EOC. Signage should not be overscaled as to draw unnecessary attention to the EOC. The building should have a sign that is in conformance with the military installation standards identifying the facility as the Emergency Operations Command Center or the appropriate title as identified by the military service branch.

4.1.1.2. Wide area mass notification systems or Giant voice public broadcast systems, if used, should be integrated with the signage to allow the EOC to quickly disseminate vital information to base personnel.

4.1.2. **Site/Physical Security.** The Physical Security and Force Protection Standards section of Chapter 3 provides information on security provisions required at the EOC, including those related to site security.

4.1.2.1. **Weather Emergencies.** Flooding and tsunami (seismic sea wave) threats can be mitigated by locating the EOC on higher elevations. For floor elevations for new and existing or renovated buildings, see Paragraph 3.5.1.3. If the EOC is located at low elevations where flooding is a concern, consider berms to reduce the extent of sand bags needed to protect the EOC and critical ancillary equipment. Runoff channels should be cleaned and reinforced. Sump pumps with adequate power to assure operation should be positioned to assist water removal.

4.1.2.2. **Parking Lots.** If the EOC that is a standalone building, and the parking is designated for the EOC only, then the parking area may be restricted to individuals using the EOC.

4.1.2.3. **Access Roads.** Connections from primary roadway systems to the EOC should be clearly defined, and avoid routing emergency personnel through extensive areas of the base or local communities. The access roads should be elevated above adjacent property sufficient to avoid being flooded or buried by snow drifts. Sufficient clearance is required on underpasses to allow large emergency vehicles to provide services to the EOC.

4.1.2.4. **Site Entry.** While one point of entry is desirable from a security supervision standpoint, the EOC requires a second access point for backup access in the event that the primary access point becomes unusable.

4.2 **INTERNAL OPERATIONAL AREA DESIGN/LAYOUTS.** The EOC should be physically arranged to permit close, continuous coordination and immediate, positive action by all responsible or impacted groups.

4.2.1. **Operations Suite.** The core area of the EOC should be identified as the operations suite. It should be arranged as an enclave and designed as a controlled access area. Suite walls must go from true structural floor to true structural ceiling. The suite should have a defined perimeter with a primary entrance to the suite and the operations room, solid core doors, partitions to structure, and utility openings shall be less than 96 square inches or hardened per MIL-HDBK 1013/1A.

4.2.2. **Types of Spaces.** EOC facilities can range from single conference rooms designated for EOC functions in the event of emergency events, to stand alone facility with many separate spaces dedicated to the various functions and activities occurring in an activated EOC. The following list of spaces identify areas that may occur in an EOC, though many of these spaces may not be required in smaller EOC facilities:

4.2.2.1. Security and Reception Areas

- Gun Clearing Area
- Entrapment Area or Room
- Reception Desk

4.2.2.2. Operations Suite

- Operations Room
- Command Rooms
- Conference Rooms
- Briefing Rooms
- Data & Telecommunications Equipment Room
- Senior Management Staff Rooms
- Information and Planning Rooms
- Communications Center
- GIS/Mapping

4.2.2.3. Administrative Offices

- EOC Commander or Emergency Management Director
- Deputy Director
- ***Communications Director***
- Public Affairs or Information Officer
- ***Administrative Assistant***

- Legal Counsel
- Senior Watch Officer or Operations Section Chief

4.2.2.4. Support Spaces

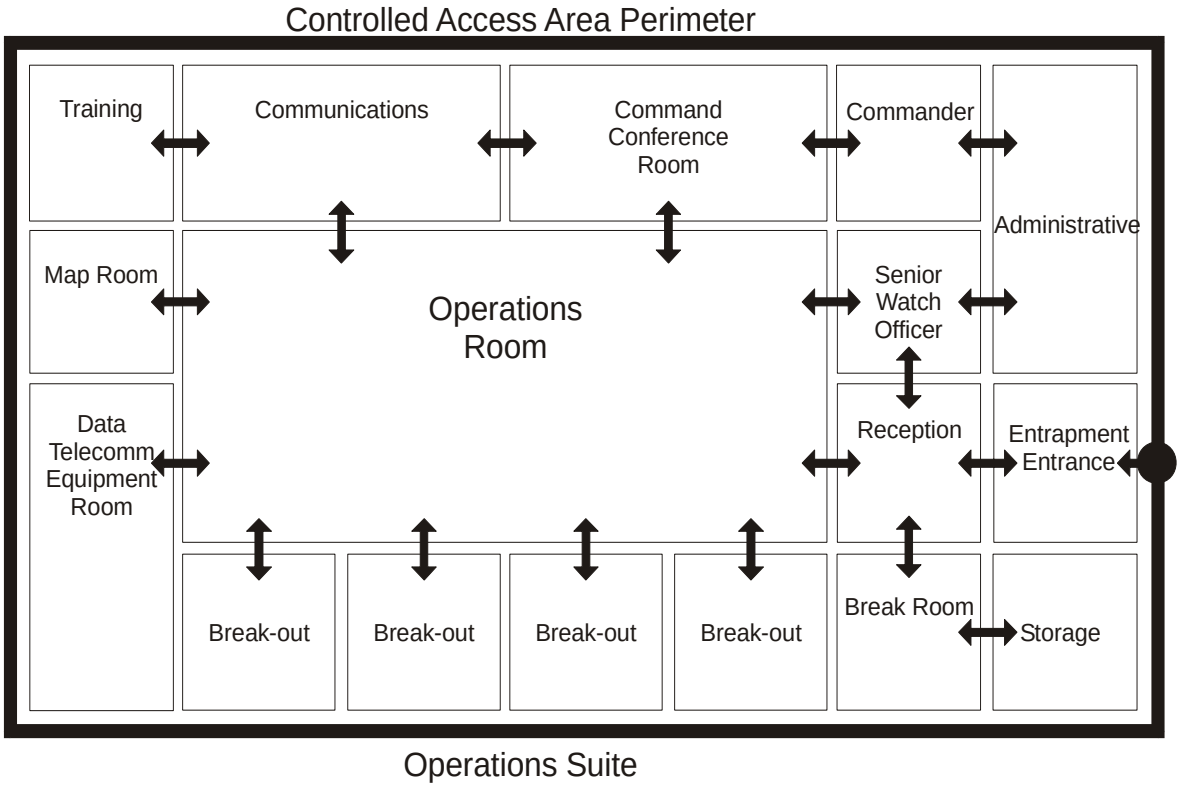
- Copier/fax machine room
- Storage
- Optional Sleeping Quarters or a Quiet Area
- Optional Food Service or Break Area

4.2.3. **Adjacency Requirements.** The EOC will consist of an operations suite with a main operations room from which direction and control is exercised. All spaces that directly support that function during an emergency incident should be located directly adjacent to the operations room within the operations suite. Often, related operations spaces exist, such as communications rooms or rooms for detailed analysis of resource management, continuity of operations and other issues. These should also be located in the operations suite. The EOC will also include office spaces for staff who work out of the EOC, which also should have access to the operations suite area. All spaces that have working relationships with the operations room should be located inside the controlled access area. Other support spaces such as sleeping areas will be located in adjacent zones, though not in the controlled access area. The support spaces should not interfere with the primary operations in the operations suite. General planning guidelines include:

- The layout should provide a minimum of interference between operating and support areas such as eating, sleeping, mechanical equipment and sanitary facilities.
- The operations suite (including operations room, communications and message centers and executive offices) should be arranged to provide maximum efficiency in the interchange of essential information.
- Necessary provisions should be made for storage, though such use of space should be carefully planned.
- When possible, furniture and equipment should be moveable to allow reconfiguration of the space and conversion of space functions to suit the situation and staff level required for the specific incident. When flexible layouts are used, layout information should be posted and response staff trained on how to quickly implement the appropriate EOC layout.

4.2.4. The following relationship diagram is intended to be a notional layout to indicate adjacencies. The actual adjacencies, size, configuration, function, operation, and existing site constrains of individual EOCs may vary considerably necessitating variations in layouts to achieve desired functional relationship of the spaces.

**Figure 4-1. EOC Relationships**




4.2.5. **Security and Reception Areas.** The EOC requires control of personnel entering the EOC Operations Room or the EOC Operations Suite. This may include a gun clearing area, an entrapment area or room and a reception desk area.

4.2.5.1. ***Entrapment area.*** If the Risk Analysis indicates that entrance security necessitates an entrapment area, this should be located prior to the reception desk. The entrapment type entry area or room provides controlled access in and out of the EOC, allow for verification of identity before admittance, allow for summoning of escort for visitors, and provide for delay of forced entries. The public should be able to access the outside entrance door to the entrapment area and be admitted to the entrapment area through communication with the receptionist or via automated access control. A second secure door should be provided for access from the entrapment area or room into the EOC once the individuals requesting entrance have been cleared to enter. The entrapment area should allow communications with the reception area either through a secure window or through an intercom and camera system. The entrapment area should be equipped with secure weapons locker for storage of items not permitted in the EOC. If the need for a metal detector for entrance screening is indicated by the Risk Analysis, accommodations for a metal detector system should be incorporated into the entrapment area. Additional strengthening and protection of the entrance may be required if indicated by the threat severity level and level of protection from the Risk Analysis.

4.2.5.2. ***Weapons clearing barrel*** Locate this outside the entrapment area.

4.2.5.3. ***Reception Desk.*** This position should be located directly adjacent to the entrance from the entrapment area and be capable of communicating with individuals in the entrapment area (if one is provided) and individuals outside the EOC requesting entrance into the EOC or entrapment area. The receptionist requires a desk, and preferably a transaction height counter of 1066 mm (42 inches) for conducting identification and badge issuing business with individuals. If indicated by the threat severity level and level of protection of the Risk Analysis, the receptionist may have an attack and ballistic resistant window overlooking the entrapment area.

4.2.6. **Operations Room.** The operations room is the nerve center of the entire EOC. It is a large meeting area designed to facilitate operational decision making. It should be centrally located in the EOC. Extensive presentation, communication and data processing aids for key personnel are maintained in the operations room.

4.2.6.1. Provide a designated plan for the seating arrangement or location of key members of the emergency operations team designed around the “concept of operations” which will determine who should sit together.

4.2.6.2. The operations room will generally be arranged with key coordinating staff and decision makers located on a dais in front of the space, with supporting emergency personnel located in groups spaced throughout the operations room.

4.2.6.3. The operations room should have a minimum of 3 displays visible to all participants, including one for briefing information, one for news briefing, and one for command operations displays. Displays may use rear projection, front projection or flat panel display systems. Flat panel displays could be plasma or LCD technology. The displays should also have teleconferencing capability. Each display should be able to have video feed from a variety of sources, including staff computers, DVD/VCR players, public news broadcasts, and teleconferencing systems. Each console station for staff should have a minimum of 1 telephone and 1 data communication connections, and possible radio connections. Provide public address capability for each position, possibly through the phone system, as well as connections to the communications and command conference spaces.

4.2.6.4. The following illustrations show four general configuration alternatives for the operations room. The total number of stations required in the operations room will be a function of the number of staff required to be present. Note that there is no one right way to configure spaces. The best configuration will depend on the concept of operations and the space available. It is important that the chosen configuration allows people to see shared displays and speak to the people that they need to interact with.

The first alternative shows positions clustered in rows. This arrangement creates working group teams of different specialists. This provides basic organization when there are many participants of different specialties that can be clustered into related teams.

The second alternative shows the positions arrayed in rows facing a primary display screen and director positions. This allows all members of the team to be focused on a common issue, each providing their own related input.

The third alternative is an advancement of the team arrangement, arraying the working group teams in “V” configurations that allow a lead position to address each group. This configuration also orients the working groups towards a front display and directory dais area.

The fourth alternative can best be described as standard conference arrangement, with all team members seated around a large conference table. This arrangement is best used with only relatively small groups, where everyone needs to focus on a common discussion. This is appropriate for small EOC operations or policy groups of larger EOC operations. The orientation of the displays to the moderator and the command positions requires consideration.

**Figure 4-2. Operations Room with staff in “teams” of console positions.**

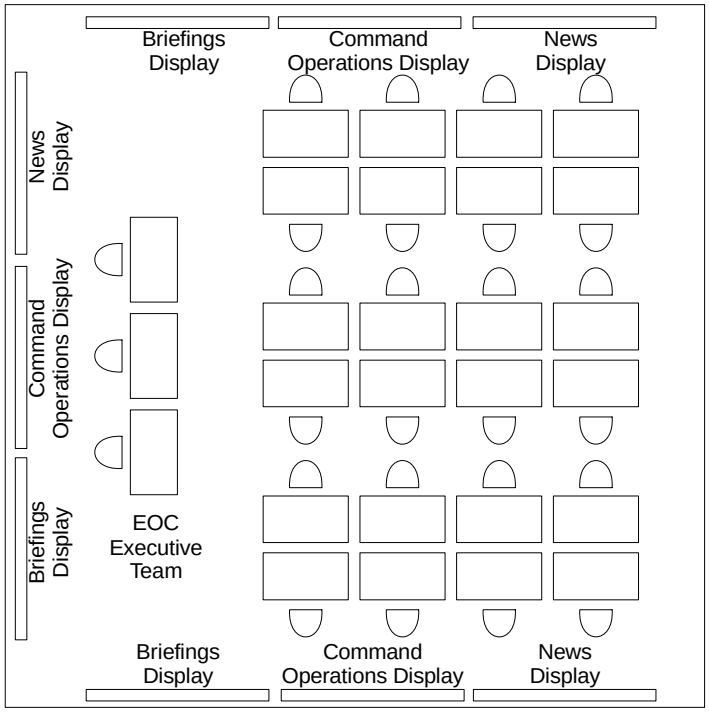


**Figure 4-3. Operations Room with staff in rows of console positions facing visual display systems.**

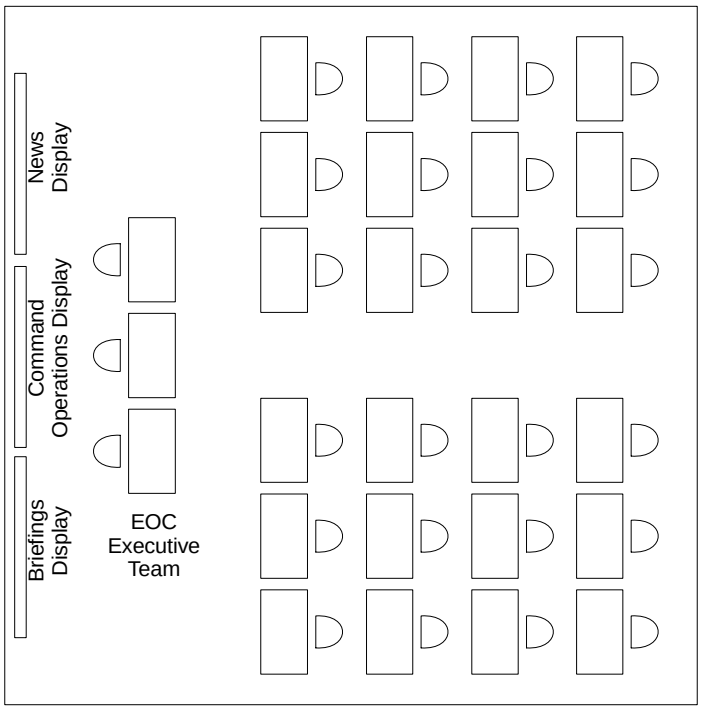


**Figure 4-4. Operations Room with staff in "V" teams of console positions oriented towards visual display systems.**

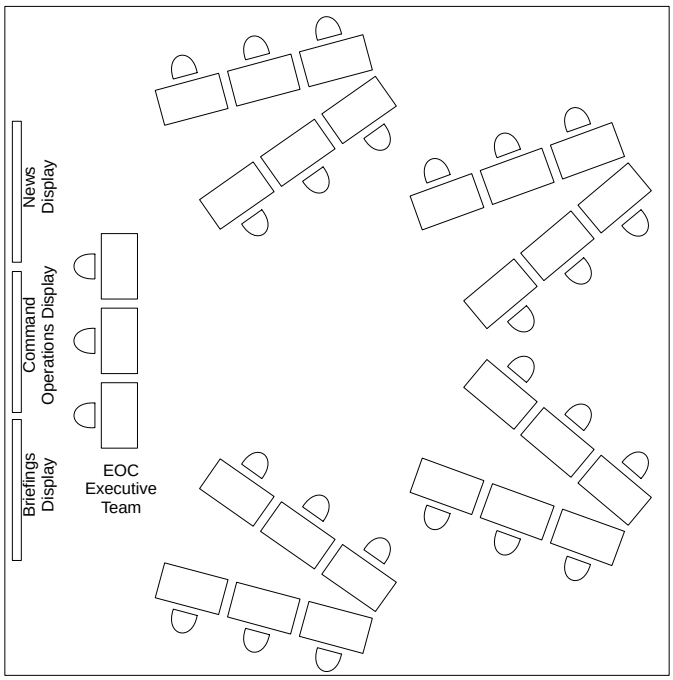
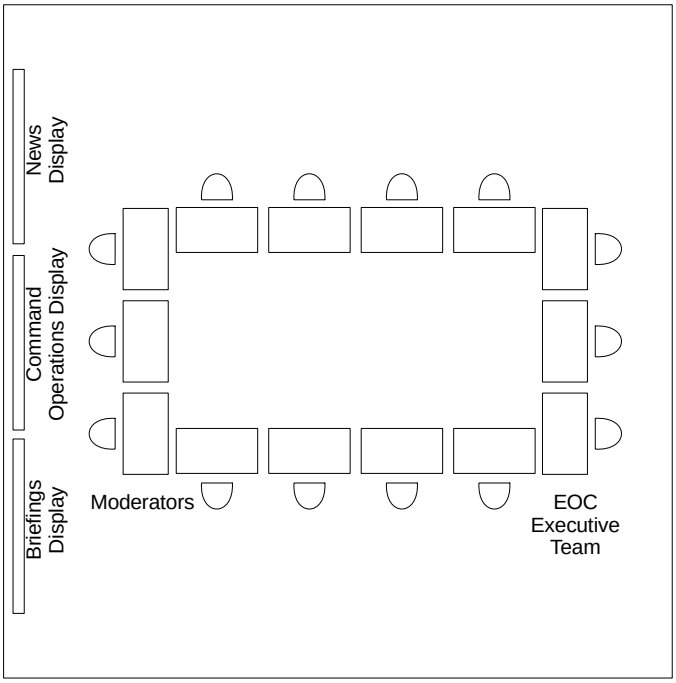



**Figure 4-5. Operations Room with staff in conference arrangement with positions around a large table.**



4.2.6.5. Consider ability to expand the operations room during major incidents. Consider installing movable partitions between operations room and adjacent large conference space. Some alternative strategies include designating adjacent space for conversion, with ability to open the major space up to the operations room, or ability to separate sub-teams into adjacent spaces that directly access the primary operations room.

4.2.6.6. The operations room should be separated from the Commander's office, meeting and briefing rooms, communication centers and support areas.

4.2.6.7. Strong consideration should be given for use of raised floor systems in operations room. The area below the raised floor must not be used as an air distribution plenum to avoid the need for plenum rated cables. Follow requirements for plenums in UFC 3-600-01, *Fire Protection Engineering for Facilities*. The operations room requires extensive communications and computer equipment. Raised floor will provide ease of reconfiguration and routing of cables.

4.2.6.8. The operations room should have a minimum ceiling height of 3 meters (10 feet) to allow individuals standing on the front dais area comfortable head height. Higher ceiling heights up to 12 to 14 feet are preferred to allow large displays.

4.2.6.9. The operations room should have acoustically absorbent surfaces including acoustical ceiling and carpeted floor. Consider acoustical wall treatment as well to minimize reverberation of sound. Provide acoustical insulation in perimeter walls. Individuals outside the operations room should not be able to eavesdrop on conversations occurring inside the operations room. All acoustical treatments must comply with fire resistant construction requirements stipulated in building codes indicated by UFC 1-200-01.

4.2.6.10. The operations room should have windows between it and command rooms, meeting rooms and communication rooms that allow staff to visually communicate when necessary. Window treatment should be provided that allow staff to screen off views and establish privacy when necessary.

4.2.6.11. Lights for the operations room should be on dimmer controls. Provide lighting on wall surfaces to illuminate display boards. Avoid light fixtures that produce direct glare. Consider indirect light fixtures or parabolic lenses on all light fixtures to reduce glare.

4.2.6.12. Consider providing an erasable marker board on a wall surface visible to all console positions.

4.2.6.13. Consider providing a drinking fountain, coffee bar with microwave, sink and small refrigerator so staff can obtain beverages and light snacks without having to leave their duty posts.

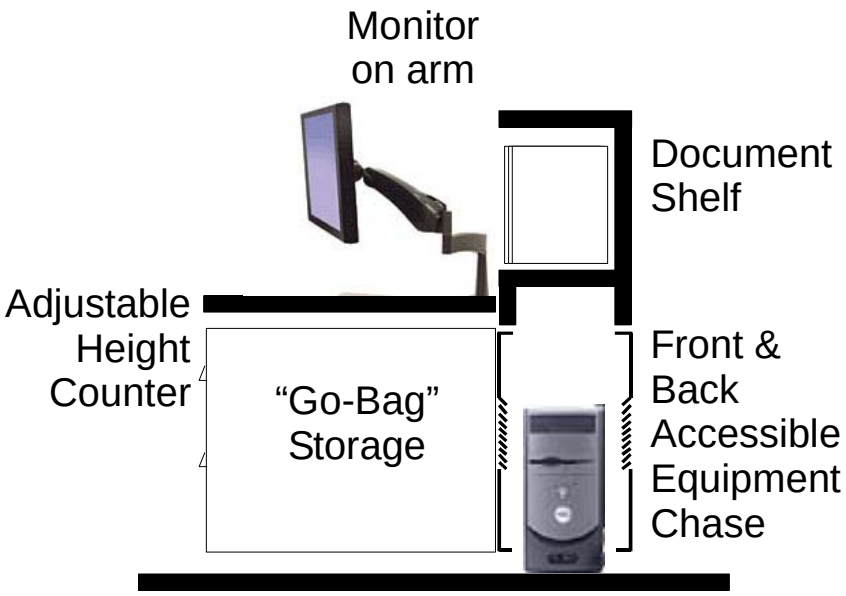
4.2.6.14. A toilet facility should be directly accessible from the operations room to allow staff efficient service.

4.2.6.15. Operation Room console positions. Careful design attention should be given to the console equipment/furniture located in the operations room. Technology and system upgrades will require frequent change-out of computer and communication

equipment at the console. Design characteristics that will facilitate flexibility include the following:

- Provide 3.7 square meters (40 square feet) per station or seat.
- Incorporate an accessible chase integral with the console for equipment and cabling. The chase should allow for access from the front and back sides, so the equipment can be serviced during emergency situations with minimal interruption of the EOC staff. Vertical chase and grommet holes are required for routing of cabling between equipment.
- Provide adjustable counter heights for work surfaces and keyboards at each console to quickly accommodate different individuals, particularly individuals with disabilities.
- Provide reference storage shelves at desk height at each console for quick access to information sources by EOC staff and Go-Bag storage under counter.
- Consoles should be designed for flat LCD/Plasma monitors rather than the bulkier CRT monitor technology. Specialized monitor wells for CRTs are undesirable because they are not flexible for different sizes, and cause console size to increase, separating EOC staff teams and consuming space.
- The total height of the console should be kept to a minimum to allow the EOC staff to view large wall displays and to communicate with EOC team members. Enough separation is desired to allow staff to concentrate on their particular issues while keeping their material from encroaching on other team member spaces.

**Figure 4-6. Operations Room Console design.**



4.2.7. **Conference and Briefing Rooms.** The EOC should be equipped with conference and briefing rooms separate from the communications/dispatch room and operations room where discussions can be held without interruption of the activities occurring in the operations and communications areas.

4.2.7.1. A **command conference room** where the Commander and his senior staff can meet can in many respects resemble the operations room, with specialized stations for each member and major display systems.

- The command conference room should have a large meeting table with stations for 10-12 staff. Provide voice, data, and power outlets for each station for telephones and computer connections. Conference rooms can be converted to operational space during events that require additional personnel. Also consider space for VTC equipment and storage space for staff briefcases and duffel bags.
- Consider providing 2.3 square meters (25 square feet) for every chair position, with a recommended minimum size of 19 square meters (200 square feet).
- Consider providing a minimum of three large electronic displays—one for news, one for briefings and one for command operations—visible to all participants. Displays may use rear projection, front projection or flat panel display systems. Flat panel displays could be plasma or LCD technology. The displays should also have teleconferencing capability. Each display should be able to have video feed from a variety of sources, including staff computers, DVD/VCR players, public news broadcasters, and teleconferencing systems. Provide a public address capability to allow commanders to address EOC staff from the command conference room.
- Strongly consider using raised floors to allow efficient reconfiguration. The area below the raised floor must not be used as an air distribution plenum to avoid the need for plenum rated cables. Follow requirements for plenums in UFC 3-600-01, Design: Fire Protection Engineering for Facilities.
- The command conference room should have acoustical absorbent surfaces, including acoustical ceiling and carpet. Acoustical wall surfaces should be considered. Walls should be insulated to prevent sound transmission through the walls.
- Provide windows between the command conference room and the operations room and communications room. A document pass-through should also be considered between the command conference room and the communications room. Window treatment should be provided that allows the staff to screen off the views and establish privacy when necessary.

- Consider indirect lighting systems with dimmable controls in the command conference room.
- Maximize wall space in meeting rooms to facilitate additional, flat panel displays, erasable marker boards and maps

**Figure 4-7. Command Conference Room**

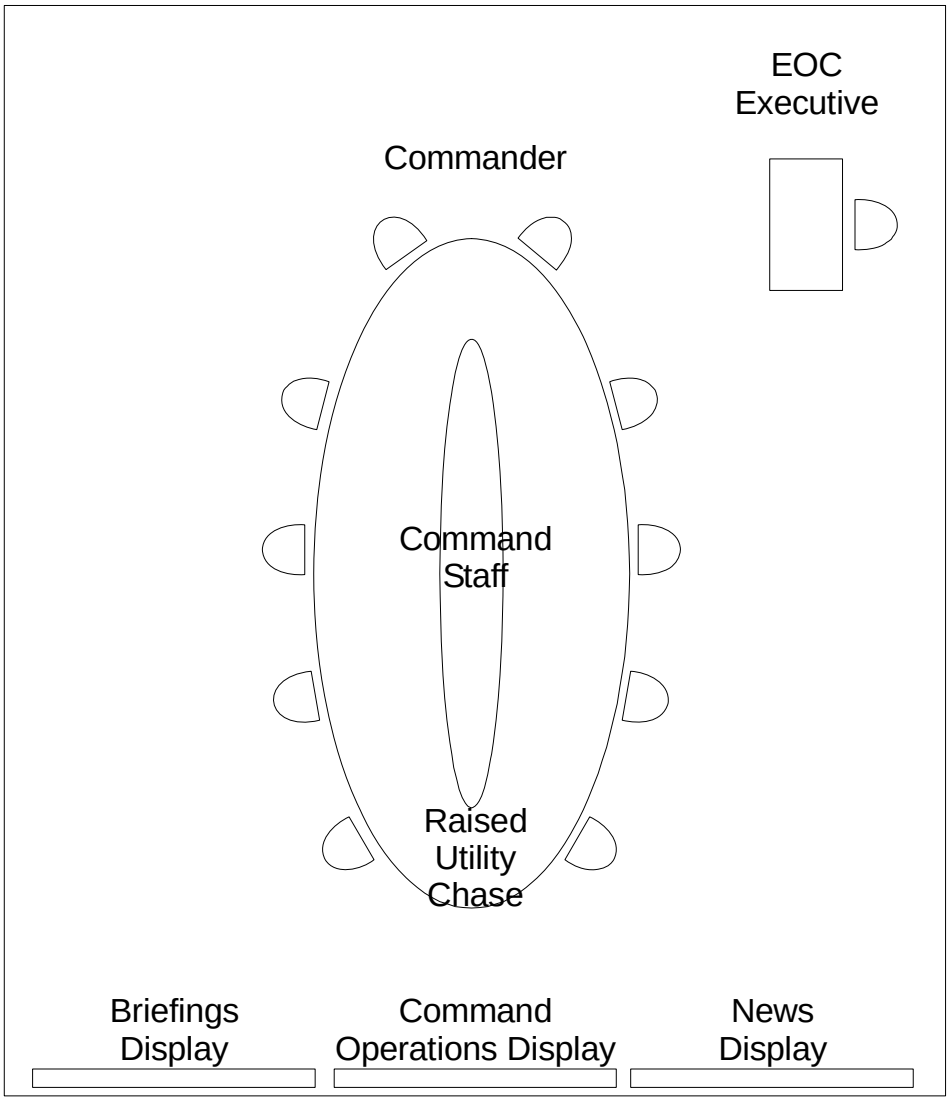
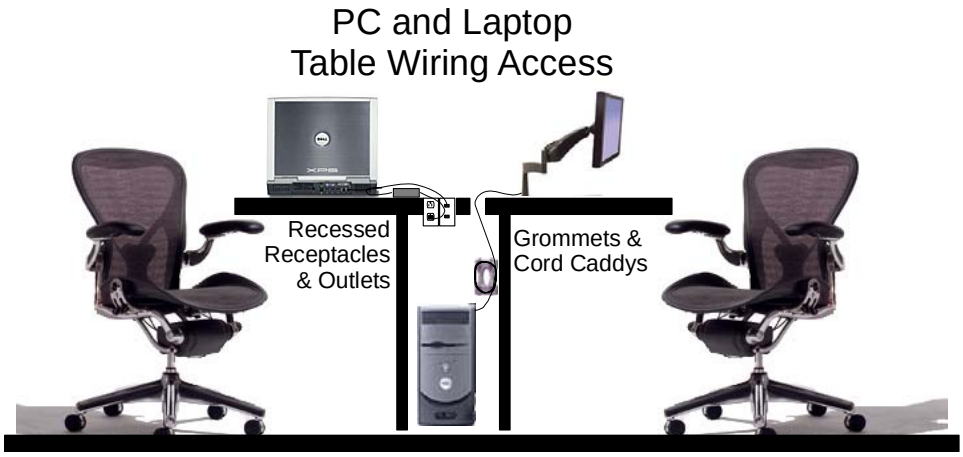


**Figure 4-8. Command Conference Table**




4.2.7.2. **Breakout Meeting and Briefing Rooms**. Depending on the size of the EOC, additional conference and meetings places should be provided. These should be arranged around the operations room to allow different emergency response groups to conduct breakout conference sessions away from the primary activity in the operations rooms.

- The meeting rooms should be sized to hold 4-8 individuals. The meeting spaces should be equipped with flexible furniture that can be reconfigured between conference arrangement and individual work tables.
- The meeting rooms should be equipped with raised floor and multiple data and telephone connection points to allow staff to plug in and work within different configurations. The area below the raised floor must not be used as an air distribution plenum to avoid the need for plenum rated cables. Follow requirements for plenums in UFC 3-600-01, Design: Fire Protection Engineering for Facilities. At least one large display should be provided in each meeting area that can receive video feeds from a variety of sources including individual staff computers, DVD/VCR players, public broadcasts or teleconferencing systems. Displays may use rear projection, front projection or flat panel display systems. Flat panel displays could be plasma or LCD technology. A public address system should be provided allowing information to be broadcast from the operations room, command conference room and communications room to the meeting rooms.
- Consider movable partitions between meeting rooms to allow larger meetings to be convened.
- The meeting rooms should have acoustical ceiling tiles, carpet and acoustically insulated walls to control sound transmission and vibration in the space.

- A window should be provided allowing staff to view the operations room from the meeting spaces. Window treatment should be provided to allow the staff to establish privacy when it is necessary.
- Consider indirect lighting systems with dimmable controls for each meeting room.
- Maximize wall space in meeting rooms to facilitate additional, flat panel displays, erasable marker boards and maps..
- Consider indirect lighting fixtures or parabolic lighting fixtures to reduce glare on display terminals.

4.2.8. **Management Staff Rooms.**

4.2.8.1. **EOC Commander's or Emergency Management Director's Office.** The Commander's office should be a private space and have controlled access. Consideration should be given to direct access between the Commander and the briefing room or Operations Room. Access to the Commander's office should be directly overseen by a subordinate position such as the senior watch officer or EOC operations officers' areas.

4.2.8.2. **Senior watch officer** or EOC operations officer or section chief should be located so that the entire operations room can be observed from the office. Consider making these spaces glass enclosed to permit observation while providing acoustical privacy.

4.2.8.3. **Staff Offices.** Depending on the military installation, additional offices may be required for key decision makers. Specific situations where this may be necessary include installations where a military and a maintenance group are both located at the base, with independent Commands. Consideration should be given to dual use of the offices for positions that will not be on duty except when the EOC is activated.

4.2.9. **Information and Planning Rooms.** Additional spaces may be required that are associated with the operations room for the analysis and preparation of information. These spaces should be equipped with workstations of 3.7 square meters (40 square feet) to allow operations staff to focus on analytical tasks without the disruption of the commotion in the operations room. A group printer, paper and office supplies, and manual reference library should be centrally located in this area.

4.2.9.1. Each workstation should be equipped with acoustical furniture panel system separating the workstation from adjacent workstations. Each station should have at least 1500 mm (5 feet) of work counter, overhead shelves for manuals and forms, electrical connections, telephone service, data connections and task lighting.

4.2.10. **Geographic Information Systems/Mapping.** A work area should be located in close proximity to the operations room for preparation of maps and large format information.

4.2.10.1. The information and planning rooms should be equipped with Computer Aided Design (CAD) oriented computer work station for working with the Geographical Information System (GIS), large format plotters, color printers and copiers, supply of boards for mounting large format presentations, and flat files for storage of large format presentation media.

4.2.11. **Communications Center.** The communications center should be located directly adjacent to the operations center rooms. The communications center for the EOC should be a separate entity from the 911 emergency communications center serving the base and local community. Acoustical treatment is required to maintain privacy and security levels of the communications room from other spaces.

4.2.11.1. Provide 14 square meters (150 square feet) for the first 2 console stations, and 9 square meters (100 square feet) for every additional console station.

4.2.11.2. Secure communication capability should be provided. This can occur in the primary communications room, if proper secure procedures can be maintained during emergency incidents, or in a contiguous separate secure communications room.

4.2.11.3. Communications rooms should be designed with operable lockable windows separating the communications room from the operations room. Window blinds or other devices are required to screen views between the two spaces.

4.2.11.4. The communications room should be located directly adjacent to the command conference room, with an operable lockable window separating the two spaces.

4.2.11.5. Multiple display mediums should be provided, including electronic displays and hard copy displays.

4.2.11.6. Secure storage is required for classified messages and orders. These must be designed to Sensitive Compartmented Information Facility (SCIF) standards—Director of Central Intelligence Directive No. 6/9 Physical Security Standards for Sensitive Compartmented Information Facilities. (DCID 6/9), with secure access control and secure walls, ceiling and floors.

4.2.11.7. A raised floor should be provided in the communications center. The area below the raised floor must not be used as an air distribution plenum to avoid the need for plenum rated cables. Follow requirements for plenums in UFC 3-600-01, Design: Fire Protection Engineering for Facilities.

4.2.11.8. Consider electronic access control to the communications room monitored by a staff position. Only authorized individuals should be allowed into the communications room.

4.2.11.9. The communications room should have acoustical treatment with acoustical ceiling, carpeted floor and acoustical insulation isolating the communications room from other spaces in the EOC.

4.2.11.10 Provide a water fountain and coffee bar with microwave, sink and small refrigerator so staff can obtain beverages and light snacks without having to leave their duty posts.

4.2.11.11 A toilet facility should be directly accessible from the communications room to allow staff efficient service.

4.2.12. **Data and Telecommunications Equipment Rooms.**

4.2.12.1. Dedicated space is needed for the electronic switching and computer equipment. Generally, consider providing a consolidated equipment room for all telephone systems, network equipment, computer servers, radio equipment, audiovisual playing and distribution equipment, recording equipment and other electronic equipment needed to serve the emergency response function. A consolidated room provides greater flexibility for future changes in equipment and systems. When placing equipment, consider any equipment that may generate electromagnetic interference. This equipment should be located in a separate shielded space from other electronic equipment.

4.2.12.2. The equipment room should have raised floors with antistatic floor surfaces. The area below the raised floor must not be used as an air distribution plenum to avoid the need for plenum rated cables. Follow requirements for plenums in UFC 3-600-01.

4.2.12.3. Consider providing cable trays, caddies, wall raceways and other means for maintaining organization of the extensive cabling serving the equipment. Separate paths for power and communications cables.

4.2.12.4. Sufficient wall space should be provided for communications boards and patch panels.

4.2.12.5. Provide clearance around each equipment rack for service and ventilation.

4.2.12.6. Access to the equipment room should be restricted to authorized individuals only.

4.2.12.7. The equipment room should be located within the operations suite perimeter to allow direct access for service by EOC operations staff.

4.2.12.8. For facilities with NMCI service, telecommunications rooms should be a minimum of 2440 mm by 3048 mm (8 feet by 10 feet).

## 4.3 STAFF SUPPORT AREA CONFIGURATIONS

4.3.1. **Sleeping Quarters/Quiet Rooms.** An EOC is a working facility and reasonable sleeping accommodations may be considered. To conserve space, two- or three- tiered bunks are desirable and may be available for 25 percent of the total number of staff.

4.3.1.1. Separate sleeping quarters should be provided for men and women.

4.3.1.2. For short duration stays, provide the following:

- A private room with an unencumbered area of 3.25 square meters (35 square feet), plus sleeping bed, storage locker/closet and desk. The bed should be a minimum of 760 mm (30 inches) wide by 2150 mm (85 inches) long.

- Provide direct access from the private room to a toilet facility.
- Either a closet or a storage locker will be required to allow staff resting to temporarily store their belongings. Storage should be a minimum of 0.3 cubic meters (8 cubic feet).
- Sleeping furnishings should be collapsible and stackable for ease of storage and conversion of space to other functions.

4.3.2. **Equipment Storage.** Spare equipment and furniture should be stored immediately accessible from the operations areas including the operations room, command room, breakout meeting rooms and communications room. The storage area should have oversized doors to allow movement of large furniture items. The storage room should be equipped with 600 mm (24 inch) deep shelving as well as floor area for larger items.

4.3.3. **Copy and Printing.** The EOC requires copiers and printer service for the operations room, command room, breakout meeting rooms, communications room, and office areas. While individual offices may have printers, printers serving operations areas should be located on the periphery or in dedicated spaces for printers and copiers. If a dedicated area is provided, the space should be directly accessible from the operation areas so staff can efficiently retrieve prints. A dedicated space should be provided for large volume machines. This will separate the staff in the operations areas from the heat, noise, commotion and emissions from large machines. The copy and printing may be collocated with the information and planning room.

4.3.4. **Health Services.** The EOC will rely on base health services for primary clinical services. Health services resources that should be maintained directly at the EOC include first aid items. Medications taken by EOC personnel will be located with their other personal items.

4.3.5. **Break Area, Dining, Kitchen and or Food Storage/Preparation/Eating.** The EOC should have designated hot and cold beverage area and microwave areas serving the operations room and the communications room so individuals in each of the spaces do not have to leave their post to obtain beverages and light snacks. In addition, facilities should be provided to feed the emergency staff for a period defined by the Risk Analysis. A multipurpose area, such as conference or briefing rooms may be used for dining. Designated food storage space should be provided.

4.3.5.1. Dining facilities should be provided that can be accessed from the operations area as well as from the sleeping area. The dining area should be sized to seat 25 percent of the staff of the facility at one sitting. Provide 1.5 square meters (16 square feet) of floor area for dining tables and chairs for each seat. Consider daylighting for lounge and dining areas.

4.3.5.2. Equipment and supplies depend on the type of meals to be served. Consider using food service caterer. If pre-prepared or canned food supplies are used, conventional kitchen equipment is not necessary. Coffee machines, cold drink dispensers, refrigerators for storage of personal food supplies, a self service sink and

microwave ovens should be provided. Freeze-dried food and meals-ready-to-eat are options for intermediate time frames. Paper cups, plates, and plastic eating utensils should be considered in lieu of dinnerware and silverware for compact storage, lightweight, freedom from breakage and economy. Provide storage of paper plates and other disposable dining ware in cabinetry in the dining area. Provide waste receptacles in the dining area. Arrangements should be made for disposal of trash.

4.3.5.3. Verify if hot meal service will be provided. If so, provide a kitchen and service line per recommendations of a food service consultant based on the menu and preparation and service methods.

4.3.5.4. Consider incorporating provisions for television reception (antenna, cable or satellite) in the dining/break area.

4.3.5.5. Assure that storage areas are provided adjacent to the food service areas for ready access to emergency rations and water supplies.

4.3.6. **Restrooms, Shower and Locker Rooms.** Toilet facilities, with separate toilets for males and females, should be provided directly off the operations and communications rooms to minimize the downtime required for breaks. Shower and locker facilities should be located where they avoid interference with the operations area. All toilet facilities must be accessible for disabled individuals. Consider providing space allocations for toilets at 5.5 square meters (60 square feet) per fixture and showers at 2 square meters (20 square feet) for each stall. Provide toilets and showers as specified in the Unified Facilities Criteria 1-200-01 Design: General Building Requirements and UFC 3-420-01FA Design: Plumbing.

4.3.7. **Supplies.** The operations room, communications room and other key spaces of the EOC require storage directly accessible from the rooms for items used frequently during EOC activation. Bulk and reserve storage and supplies should be located with direct access to receiving/dock facilities and to avoid interference with the operations areas.

4.3.8. **Physical Plant Spaces.** Physical plant spaces should be inside the EOC secure perimeter and directly accessible from inside the EOC. EOC staff may require direct access to service equipment. In addition, only authorized individuals should be allowed access to the equipment.

4.3.8.1. Verify provisions or area for maintenance and repair of equipment, which may include special shops for mechanical and electrical maintenance. Areas are required for storage of parts, tools and any toxic/flammable liquids.

4.3.8.2. Electrical equipment areas, mechanical/fire protection areas and other support equipment shall be separated from each other and other areas in the facility.

4.3.8.3. The EOC should be designed so that janitorial services can be performed while the EOC is activated for extended durations. Janitorial closets are required as specified in the UFC 1-200-01 Design: General Building Requirements and UFC 3-420-01FA Design: Plumbing.

## 4.4 ERGONOMICS AND SPACE STANDARDS.

4.4.1. **Planning Factors.** In addition to the primary spaces identified in the facility program, additional space is required for circulation, constructed elements and space planning inefficiencies. In general, planning factors should be a direct function of the size of the space, the width of the circulation serving the space and additional non-occupied areas required for mechanical services, chases and similar features.

4.4.2. The requirements for space and furniture will vary with the size and purpose of the EOC, and depending upon the space that is available or affordable within the budget for the EOC. Some spaces may be shared with other permissible functions, particularly storage, as long as the space is easily accessible during times of emergency. Storage areas should never be allowed to fall below 5 percent of the gross EOC area.

4.4.3. **Furniture and Equipment.** Furniture and Equipment contribute directly to the EOC's ability to function.

4.4.3.1. Give consideration to selecting furniture that is less bulky or heavy. In many situations, items will need to be moved or repositioned, and bulky or heavy items can hinder the ability of the EOC to react swiftly. When EOC spaces are used for other purposes, movable furniture required for EOC functions should be located in or adjacent to the EOC. Lightweight durable equipment that can be easily moved without risk or damage is preferred.

4.4.3.2. Selected items should be very durable and reliable. An EOC dealing with a crisis incident should not be hindered by failing equipment. When potential for breakdown or failure of equipment exists, replacement parts, ease of access to switch out equipment, and training for staff to make the replacement is essential.

4.4.3.3. All equipment should be tested to assure that it operates satisfactorily on the emergency power supply, and that the equipment is compatible with the power supply, including cycles, wattage, amperage, cycles, in alternating or direct current configuration.

4.4.3.4 Resources to assist in ergonomic design include the following:

DG 1110-3-122 *Design Guide for Interiors* (p.7.1)

http://www.wbdg.org/ccb/browse_cat.php?o=31&c=103

DOD Ergonomics Working Group, http://www.ergoworkinggroup.org/

EP 385-1-96 USACE Ergonomics Program Procedures

http://www.usace.army.mil/publications/eng-pamphlets/ep385-1-96/toc.htm

Occupational Health and Safety Administration

OSHA Effective Ergonomics: Strategy for Success
http://www.osha.gov/SLTC/ergonomics/index.html

OPNAVINST 5100.23G, *Navy Occupational Safety and Health Program Manual*, Chapter 23, Ergonomics Program

http://www.safetycenter.navy.mil/instructions/osh/510023/default.htm

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# CHAPTER 5

# PHYSICAL CONSTRUCTION REQUIREMENTS

## 5.1 APPLICABLE MILITARY STANDARDS.

5.1.1. **UFC 1-200-01 Design: General Building Requirements** . The EOC will comply with UFC 1-200-01 , which adopts and amends the International Building Code (IBC.) This UFC provides guidance and refers to other documents for information on the following topics: use and occupancy classification, special detailed requirements based on use and occupancy, general building heights and areas, types of construction, fire-resistance-rated construction, interior finishes, fire protection systems, means of egress, accessibility, interior environment, energy efficiency, exterior walls, roof assemblies and rooftop structures, structural design, structural tests and inspections, soils and foundations, concrete, aluminum, masonry, steel, wood, glass and glazing, gypsum board and plaster, plastic, electrical, mechanical systems, plumbing systems, elevators and conveying systems, special construction, existing structures, referenced standards and signs.

5.1.2 **UFC 4-010-01 Design: DoD Minimum Antiterrorism Standards for Buildings** provides the criteria for force protection of military Installations.

5.1.6 **Army** facilities should be designed in accordance with Army Regulation 190-16 *Physical Security*, Chapter 5, "Security of Critical Communications Facilities."

5.1.7 **Military Handbook 1013/1A** provides guidance on physical security of facilities.

5.1.8 **SECNAV Instruction 5200.1R** provides criteria for design of the controlled access area. Controlled Access Area (CAA) this term is a clarified definition of the current NAVSO P-5239-22 CAA: A physical area (e.g., building, room, etc.) which is under physical control and to which only personnel cleared to the level of the information being processed are authorized unrestricted access. All other personnel are either escorted by authorized personnel or are under continuous surveillance. A CAA shall comply with the physical security requirements of Section 3 of Appendix B to NAVSO P-5239-22. Within a CAA, a protected distribution system (PDS) will not be required for classified information processed at or below the classification level of the CAA. While unprotected cables may be run within the CAA, they will not be run outside the perimeter of the CAA.

5.1.9 **SIPRNET or a SCIF**. If it is determined that a facility requires SIPRNET or a SCIF, then a separate controlled space within the EOC should be provided.

The SCIF spaces will be designed to Director of Central Intelligence Directive No. 6/9 *Physical Security Standards for Sensitive Compartmented Information Facilities*. (DCID 6/9).

5.1.10 When the facility is served by the Navy and Marine Corps Intranet (NMCI), the facility will be designed to meet UFC 3-580-10, *Navy and Marine Corps NMCI Standard Construction Practices*.

5.2 **BUILDING SHELL.**

5.2.1. **Exterior Envelope.** Consider placement of EOCs in subgrade structures to provide the best protection from damage. Alternative strategies can include using earth berms to protect ground level building envelopes. Coordinate location of EOCs in subgrade structures with paragraph titled, “Site Evaluation.”

5.2.2. **Doors and Windows.** The EOC should have a minimum number of door, window and vent openings. While windows are discourages, if exterior windows or glazing is required, provide in accordance with UFC 4-010-01 and Physical Security requirements. Windows and air vents should be protected from flying objects and inundation.

5.3 **INTERIOR CONSTRUCTION.**

5.3.1. Interior finishes will be designed in accordance with fire protective measures stipulated in UFC 1-200-01 and UFC 3-600-1 .

5.3.2. Interior finishes will be of flame spread resistance Class A or Class B[12].

5.4 **MECHANICAL SYSTEMS.** All mechanical systems such as heating, ventilation and air-conditioning (HVAC) must be capable of operating on emergency power. Because the occupancy concentration of EOC personnel can be high, air-conditioning may be required even if the facility is located in areas of the country where air-conditioning is not normally installed.

5.4.1. **Standards.** Heating, ventilation air-conditioning mechanical, ventilation and air-conditioning systems for EOCs shall be designed in accordance with UFC 3-410-01FA Design: Heating, Ventilation and Air-Condition, and MIL-HDBK 1003/3, *Heating, Ventilation, Air-Condition and Dehumidifying Systems* for Navy.

5.4.2. **Filtration System.** Filtration system design should take into account abnormal amounts of dust or contaminants that may be airborne during emergency incidents. Filtration can be assisted by the position of the air intake. Air intakes facing into prevailing winds will have greater filtration needs than air intakes facing downwind. The air speed at the intake also can impact the size of the particles entering the ventilation system. Air intakes should be separated into multiple smaller intakes rather than one large intake. Locating air intakes on different sides of the building provides greater chances that air intakes will not be totally compromised by debris accumulation or structural collapse on one side of the building. The filter should be oversized to allow additional capacity before the filter becomes blocked. Filters should be exchanged more frequently than in normal office occupancies to maintain readiness for emergency situations.

5.5 **ELECTRICAL SYSTEMS.**

5.5.1. **Standards.** Interior electrical systems will be designed in accordance with UFC 3-520-01 *Interior Electrical Systems* and Federal Information Processing

[12] UFC 3-600 -01 Design: Fire Protection Engineering for Facilities, U.S. Department of Defense

5.5.2. Standards Publication 94 *Guidelines of Electrical Power for ADP Installations*. The need for special features should be determined by the Risk Analysis.

5.5.3. **Emergency Power.** Requirement for emergency power backup is based on criticality of EOC and the need for the EOC to remain operational after a power failure or event that affects the EOC. Some installations have contingency plans in place that transfer the EOC function to an alternate location in the event something disrupts the operation of a single EOC. When required, only essential systems should be placed on the emergency system with a generator being the primary emergency power source. Essential systems, which may include HVAC and lighting for the EOC, should be automatically restored to operation within 10 seconds after interruption of the normal source. In addition, voice, data and communications systems should be placed on uninterruptible power supplies (UPS) typically provided with equipment. The type, size and number of generators is based on the operational requirements of the EOC.

5.5.2.1. Diesel emergency generators. Design in accordance with UFC 3-540-04N Diesel Electric Generating Plants.

5.5.2.2. Fuel Storage System for Emergency Generators. Design in accordance with UFC 3-540-04N; NFPA 30, *Flammable and Combustible Code* and NFPA 37 *Stationary Combustion Engines and Gas Turbines*.

5.5.2.3. Emergency generators and fuel supplies should be placed within the same protective and secure enclosure as the EOC. Provide acoustical treatment to isolate generator noise from the EOC operations. Provide physical separation between emergency generator room and EOC to prevent generator exhaust fumes, fuel odor, and noise from affecting the operation of the EOC. Provide sufficient work area around the equipment for normal operation, maintenance and overhaul.

5.5.2.4. Fuel storage requirements should be based on the installation's operational procedures and fuel distribution system.

5.5.2.5. If the EOC shares a building with non-EOC-related functions, the EOC's emergency power source should be independent from the building's backup generators serving the non-EOC-related systems.

5.5.4. **Uninterruptible Power Supply.**

5.5.3.1. Critical equipment and systems that cannot risk loss of data or performance should be placed on uninterruptible power supply to assure continued performance during a power outage or allow time to transfer of function to an alternate EOC. Typically, provide UPS with the equipment.

5.5.5. **Power Distribution.**

5.5.4.1. The EOC power system shall be evaluated for total harmonic distortion. Corrective measures shall be provided in accordance with TM 5-691 *Utility Systems Design Requirements for C4ISR Facilities*, Chapter 10.

5.5.4.2. The relay and control scheme shall make possible the clearing and isolation of faults and the separation of EOC facilities technical loads from the

commercial power sources during faults or abnormal operating conditions on the commercial power line.

5.5.6. **Lighting – Interior and Exterior.**

5.5.5.1. Lighting should be designed in accordance with UFC 3-530-01.

5.5.5.2. Interior lighting requirements will vary throughout the EOC based on the type of operations and on whether the EOC is under normal or full operating conditions.

5.5.5.3. All lighting in critical areas should be served by the emergency power system to allow continuous operation of the EOC in the event of a power outage.

5.5.5.4. Consider dimmable indirect lighting systems in operations rooms, conference rooms and areas with large format video display to minimize direct source glare.

5.5.5.5. Provide battery powered emergency lights at all telecommunications equipment rooms, console positions and medical areas as well as areas required by NFPA 101 *Life Safety Code*.

5.5.7. **Maintenance.** Maintenance checks should be performed as part of every practice drill and at schedule intervals.

## 5.6 WATER SOURCES, PLUMBING AND PIPING SYSTEMS AND RELATED STORAGE CAPABILITIES.

5.6.1. **Design Standards.** Design of the water supply, distribution, storage and waste water treatment should comply with the following Unified Facility Criteria.

- UFC 3-230 -03A *Water Supply*
- UFC 3-230 -04A *Water Distribution*
- UFC 3-230 -06A Subsurface Drainage
- UFC 3-230 -07A *Water Supply: Sources and General Considerations*
- UFC 3-230 -08A *Water Supply: Water Treatment*
- UFC 3-230 -09A *Water Supply: Water Storage*
- UFC 3-230 -10A *Water Supply: Water Distribution*
- UFC 3-230 -13A *Water Supply: Pumping Stations*
- UFC 3-230 -14A *Evaluation Criteria Guide for Water Pollution Prevention Control and Abatement Programs*
- International Plumbing Code (IPC).

5.6.2. **Potable Water.** Assure that the EOC has potable water available at all times. Potable water is required for drinking, hand washing, food preparation and medical first aid purposes. Therefore, supplementing the available potable water supply with bottled water may be necessary during emergency conditions. Functions that can utilize non-potable water include auxiliary power cooling, mechanical cooling systems, fire suppression systems, waste disposal systems and housekeeping. The Risk

Analysis should determine protection levels for potable water necessary based on the threat severity level and balance of risk level that is acceptable.

5.6.3. **Interruption of Service.** Assure adequate supply of water for sanitation purposes. When water supply from base, municipal or other extensive water distribution systems is used for the EOC, evaluate the probability of interruption of service under likely emergency conditions and if the facility will remain operational during interrupted service. Verify that the water service utility has its own emergency power and protection measures. If emergency conditions may interrupt supply, consider other sources, including a separate well or on-site reserve storage. The Risk Analysis should determine the reserve water supply duration necessary. Consider methods to reclaim water from the building systems by flushing pipes or draining storage tanks to assure availability for use in essential life support functions.

5.6.4. **Waste Water.** Preference should be given to waste water systems that rely on gravity flow. For EOCs where waste water sewer systems have a probability of backing up under emergency conditions and where the facility will remain operational during interrupted service, consider reserve storage to allow continuous hygienic operation of the EOC during emergencies. Consider pumping requirements to remove fluid waste from subgrade EOC areas into sewer systems. When wastewater requires pumping, ensure pump is connected to emergency generator.

5.6.5. **Chemical Toilets.** An alternative to waste storage is chemical toilets, though the capacity of chemical toilet systems should be carefully evaluated to assure adequate service for a period defined by the Risk Analysis.

## 5.7 COMMUNICATION DISTRIBUTION

**Standards.** Provide entrance facilities, equipment rooms, horizontal and vertical distribution, grounding and bonding according to UFC 3-580-01 and the following standards:

5.7.1. **Navy and Marine Corps Intranet (NMCI).** For facilities with NMCI service, coordinate infrastructure design with UFC 3-580-10.

5.7.2. **SIPRNET.** When the EOC is served by SIPRNET, the EOC will be designed to meet the following standards:

5.7.3.1. Army – USACE ETL 1110-3-502 *Telephone and Network Distribution System Design Implementation Guide*.

5.7.3.2. Navy – IA PUB-5239-22, *Information Assurance Protection Distribution System (PDS) Publication* (FOUO).

5.7.3.3. Air Force (JTA-AF) *Fixed Base Technical Architecture* (FBTA) Design Criteria related to communications and information systems.

## 5.8 ELECTRONIC SECURITY SYSTEMS.

The extent of the electronic security systems (ESS) should be determined by the *Risk Analysis*. The appropriate items based on specific threats will be recommended based on the UFC 4-020-01 *DoD Security Engineering Facilities Planning Manual* and the UFC 4-020-02 *Security Engineering Facilities Design Manual*. The EOC should

consider an Electronic Security System (ESS) which may include but is not limited to intrusion detection, access control system, and video assessment of alarms. When the EOC is housed in a dual use facility, security must allow the facility to operate in a normal mode when emergency conditions do not exist. The security system must allow the EOC to scale the level of security protection appropriately to the current conditions. The ESS design should be based on:

- **Navy and Air Force -** UFC 4-021-02NF
- **Army -** UFC 4-020-04A *Security Engineering: Electronic Security Systems*
- **DCID 6/9 for SCIF**

## 5.9 ENTRANCE CONTROL.

The entrance to the EOC and doors accessing communications rooms, operations rooms and briefing rooms must have secure locks and an access control system if determined by the Risk Analysis. The doors must have an access control system using card readers, key pads or similar technology capable of recording access events. The space must be monitored by an intrusion detection system using volumetric sensors and point sensors on all doors and windows.

# CHAPTER 6

# INFORMATION MANAGEMENT/ TECHNOLOGY SYSTEMS

6.1 **GENERAL** Information on equipment is provided for informational purposes only. Coordinate actual requirements with the Command's Information Technology Officer.

6.1.1. **Role of Communications.** Communications are the reins of command and control. As such, communication capability will determine the success and effectiveness of the EOC. Though the EOC facility construction project will not provide most of these systems and equipment, it is important to understand the roll of communications in designing an effective, fully functional EOC. There is a direct link between the efficiencies of communications and processing of information and the speed and accurateness of the analysis needed to determine response activities. Information displays are the key factor in allowing EOC members to visually assimilate and process information in order to make sense of chaotic maelstrom type of events. Physically plotting information on map displays is perhaps the best way in which to spatially give individuals the tools in which to form their mental picture of unfolding events. People and functions throughout the building should be able to access information that is available in other portions of the facility. This may be either just audio (as in briefings) or the visual display of information. Use of the Internet as a source of information during disasters can only be expected to grow, so computer access to outside networks needs to be robust and redundant. Information should be able to be moved and shared throughout the facility. Telecommunications links should exist that allow information to be transmitted to other remote sites like other EOCs or perhaps national centers. Internet connectivity should at this point be considered paramount.

6.1.2. **Flexibility**. Flexibility is one of the primary criteria for the facility as a whole. This is especially true as it relates to the audiovisual system. The long life span for an EOC facility means that it should accommodate a number of evolutions in technology. As communications, automation and audiovisual systems continue to merge in form and function, future needs should be considered. The basic facility environment needs to support the visual display of information via television monitors, large screen projection systems and more conventional wall display systems. Lighting controls and wall space design needs to be integrated for successful information display.

6.1.3. **Media Sources**. Access to local and national media sources, both radio and television is necessary. This information is needed to feed a rapid impact assessment process that is designed to determine what events are unfolding and their impact on people, organizations and the community as a whole. The EOC should have cable television service to receive a broad selection of channels.

6.1.4. **Survivability.** Emergencies can jeopardize communications. Earthquakes, windstorms, fires and flooding can disrupt services by damaging or destroying antenna systems, repeaters, base stations, transmission lines or switching centers. Communication systems and equipment should be designed, installed and

maintained with that in mind. Where practical, provide redundant or alternate systems and provide replacement equipment in stock, particular antennas. All electronic systems for communications and computing should have redundancy, to allow for serving/replacement of malfunctioning equipment while still having active equipment in use

## 6.2 COMMUNICATIONS/TELECOMMUNICATIONS SYSTEMS

6.2.1. **Communications Connections.** The EOC's function is directly related to its ability to communicate. Communications systems can include military radio and telephone systems as well as connection to 911, law enforcement, fire and medical service providers. Communication equipment includes PBX systems, phone headsets, mobile phones, secure phones, satellite phones and wireless phones. Much of the activity occurring in the EOC relies directly on telephone communication. Therefore, it is essential that maximum telephone capability be provided in the EOC. This should include commercial lines, autovon, cellular telephone and hardwired single point to point telephone lines (P-lines). Phone capabilities include unclassified and classified capabilities. It is essential that emergency commanders consider the following issues involved in maintaining a functional communications network.

6.2.1.1. The EOC should have direct communication ability with base law enforcement, fire response, health services, engineering service and other operating units of the base.

6.2.1.2. The EOC should have direct communication ability with local communities, local law enforcement, local fire response services and local health services, even when the base has its own equivalent services.

6.2.2. **Telephone.** The central phone switch will need to accommodate the number of lines required to support the EOC activation as well as a selective key routing system to redirect calls to specific phone sets. Phone jacks will need to be installed in the conference room and the meeting room to accommodate the number of people that will be using these rooms during emergency activations. EOC staff will need to be able to forward numbers to various phones during emergencies. Headsets and non-ringing phones (ring lights) are recommended for use in the operations centers. For additional call capability, consider Voice of Internet Protocol (VoIP) technology for the EOC

6.2.3. **Secure Fax.** The communications room may require secure facsimile machines.

6.2.4. **Radio.** The EOC will need a system to support access to multiple radio communications between the various support agencies and field personnel. Capability to expand radio communications within the building is also desirable. Headsets are recommended for use in the operations centers.

6.2.5. **Public Affairs.** Public Affairs briefings to the public and media should not be conducted from the EOC per DoD 0-2000.12.H .

6.2.6. **Communications Interconnectivity.** Interconnection with other communication and emergency response capabilities is important. This includes within the military and to other jurisdictions and services. The EOC should be capable of

receiving all primary frequencies of adjacent jurisdictions. The EOC should also be capable of communicating with short- and long-range amateur citizen radio band waves.

6.2.7. **Antenna.** The communication system may require an antenna for radio and microwave communication. Outside antennas can be vulnerable to failure in extreme conditions and should be designed to withstand excessive forces from wind or impact of debris. Provide redundant antennas that can be erected after a blast or other event that disables the permanent antenna. Consider retractable antennas if there is sufficient area at the site.

6.2.8. **"Giant Voice" Base Broadcast.** The EOC should have connectivity to the military installation warning system and "Giant Voice" base-wide public broadcast system or wide area mass notification system. Refer to UFC 4-021-01 *Design and O&M: Mass Notification Systems*.

6.2.9. **Audio.** Provide intercom and public address systems for use during emergencies. These may be integrated into the telephone system. Intercom systems allow for direct two-party and conference call communications across noisy EOC areas. If connected to a base, installation or other larger system, intercoms can also allow EOC representatives to contact their offices. A public address system can enable commanders to alert the entire EOC staff to a particular problem or make known an important policy decision. Consider zoning the public address system to allow commanders to address just the operations control room, the operations suite, the entire EOC, the entire building, or the entire military installation. Appropriate audiovisual equipment should be installed in the Meeting Room. This can include a public address system and a meeting room speaker system. Audio from the console positions can be selectively monitored at the workstations of the EOC personnel.

6.2.10. **Recording.** Consider providing recording capabilities. This includes voice and video information and recording of any hardcopy form of communication. Methods of logging recordings should be provided as well so they can easily be referenced and recalled.

## 6.3 VISUAL DISPLAYS

6.3.1. **Types of Displays.** Technology capability of the EOC should allow for computer-generated displays, as well as additional visual aid supports, such as multiple display terminals, video projection, drop down screens and large wall-mounted monitors. A large scale multiple screen display system should be considered. These may be front projection, rear projection, flat panel display, large CRT or other technologies. Low technology capability should also be available such as overhead projector systems, wall charts and erasable marker boards. For operation rooms, a minimum of 3 large format video display panels should be provided.

6.3.1.1. **Briefings.** These include analysis of incoming information and issues impacting decisions to be made and descriptions of decisions, orders and outgoing communications.

6.3.1.2. **Command Operations Displays.** Visual depiction of the incident, resource locations and deployment and other information concerning the incident.

6.3.1.3. **News Broadcast Displays.** Input from multiple news organizations and broadcasters should be made available to the EOC staff through the visual display system.

6.3.1.4. **Other Displays.** Additional displays may be desirable or necessary, depending on the mission of the EOC, for other information, such as weather or teleconference video feed.

6.3.2. **Media Content.** Displays control systems should include capabilities for incorporating the following:

- EOC layout and organization
- Message flow
- Major events
- Problem log
- Damage assessment
- Maps
- Hazard/Risk Maps
- Weather
- Resource status
- Signs for functional sections, groups, units
- Signs for staff positions
- Public broadcasts and news programs

6.3.3. **Display Technology.** A multiple screen display system is recommended. All the displays should be switched and routed independently, to allow any media content to be displayed on any display. This will allow a virtual desktop capable of displaying numerous computer windows, video and video conferencing. Verify spatial requirements of the specific display technology. For rear screen projection systems consider additional space for the projection. Consider using reflective mirror arrangements to minimize the amount of space required. Front projection systems require sensitive lighting to assure visibility. Flat panel display technologies, such as plasma screen or LCD, may be considered. If the displays use large CRT monitors, consider the weight, energy use and heat generation from the unit. The video images of the operations control room should also be available through switches to monitors in the command conference room, briefing meeting rooms and communications room. The consoles should have the ability to selectively switch the video displays from the console monitors to large wall displays and vice versa.

6.3.4. **Low-Tech Alternatives.** Alternatives to electronic display systems include large format hard copy maps and displays, tackable wall surfaces, marker boards and overhead projectors. While these are not recommended as the primary

visual display formats, accommodations for these methods should be included in the EOC as a backup in case of total failure of the electronic visual display systems.

6.3.4.1. The least expensive and most flexible display media, charts and maps (either magnetic or plastic overlay) are easy to store, use and relocate if necessary. The disadvantage of this medium should be considered in developing EOC information systems. Wall charts may become difficult to keep current in the hectic early activity of EOC operations when data they are designed to display are most needed. Wall charts are also easily obstructed by normal traffic in the EOC. When a chart is filled, it often has to be erased, thus losing data on early problems and responses, unless procedures are developed to record it before erasing (such as with instant-print camera).

6.3.4.2. Overhead projectors offer a simple, inexpensive method of displaying important information. Viewgraphs or transparencies (plastic sheets) used with the projector can be saved or reproduced on a copy machine for records, thus avoiding loss of valuable information as operations proceed.

## 6.4 VIDEO ROUTING.

6.4.1. Controller equipment should be provided which will permit directing output to displays in the various areas. In addition, there is a need for video routing equipment that can direct signals and data from multiple sources to the various display devices.

6.4.2. It is imperative that there is significant planning and detail placed on the design and routing of cables. The specialized equipment needed to provide the shared display requirement will not necessarily require a huge amount of space, but the amount of cabling and signal wiring will be considerable. The location of wire chases, conduit and access points will need to be carefully considered.

6.4.3. Configurable routing capability is desirable, and can be accomplished with a video router. A video router provides switching capability for serial digital video input and output. In order to provide the needed high quality video to be used in several display areas within the facility, a unit that includes adjustment-free operation, easy to read display, fully compatible with SMPTE 259M standard and operational up to 540MB/s will be required. An optional RS485 dedicated output channel with remote controls would allow the operator(s) to gain routing control of a particular output channel from another location when the situation preclude the operator to be in the same room with the main unit. These dedicated remote controls could be used for each of the output channels, with multiple remote controls connected with the main unit depending on the configuration of the router.

## 6.5 COMPUTING.

6.5.1. Computer applications can help support emergency management and related functions. Appropriate software should be procured that will support these functions. Appropriate computing capabilities should be available in the EOC. Network PCs (or “thin clients”) can be considered for use in the EOC. Network PCs are typically smaller and lighter and easier to manage in an EOC environment. These items will need to be easily stored and quickly deployed.

6.5.2. The EOC should be equipped with crisis management software and other systems to measure, plot and predict the progression of emergency incidents that are likely to occur within the area of responsibility of the EOC.

6.5.3. Technology dependence poses vulnerabilities in terms of potential interruptions. The new facility should provide an appropriate level of redundancy for supporting continuity of technology to maintain an acceptable level of risk from these disruptions. Redundancy should be considered for not only electrical power, but also for vital systems connectivity, such as network data and voice cabling.

6.5.4. Computer applications provide excellent storage, display and printing capabilities; they can store emergency plans, SOPs, checklists, resource files, and alert lists and can produce reports and public information releases. Additionally, computers offer the greatest flexibility in providing information to satellite offices in the EOC. Computers should have a reliable power source, independent of the commercial power source, and should be tested for operability on alternate power-sources.

6.5.5. Computer Displays:

- Should be free from disturbing glare and reflections.
- There should be appropriate contrast between the screen and its background.
- Adjustable coverings should be provided for any windows.

# APPENDIX A

# DEFINITIONS

Alternate EOC. A second location for EOC operations that is developed to provide services in case the primary location becomes disabled.

C2: Command and Control

C4: Command, Control, Communications and Computers

C4I: Command, Control, Communications, Computers and Intelligence

C4ISR: Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance.

Capability refers to the hardware necessary to execute plans, including EOC facilities, EOC systems, vehicles, heavy equipment and stocks of necessary emergency supplies.

CBRNE, CBRECA. Chemical, Biological, Radiological, Nuclear, Explosive or Cyber Attack - Spectrum of attacks that threaten installations.

Communications Room. The space where staff are assigned to receive, log, record and dispatch communications between the EOC and other entities involved in emergency incidents.

CAD. Computer Aided Dispatch, or Computer Aided Design

Dual Use. The co-use of space for EOC and other purposes.

Emergency Management Director – see also EOC Commander or Director. Individual responsible for assuring preparedness and management of the EOC so that it can fulfill its function in the event of an emergency incident.

EOC. Emergency Operations Center – the protected site center where coordination and management decisions are facilitated in the event of an emergency incident

Emergency without warning: when an incident occurs requiring full activation of the EOC in response to the incident

Emergency with warning, when the EOC is brought into full or partial activation to preemptively reduce the impact of impending incidents, and respond to the impact of the incident when it transpires.

EPCRA. Emergency Planning & Community Right to Know Act - legislation requiring government entities to notify communities of emergency incidents.

ESEP. Engineering Senior Executive Panel - Department of Defense panel responsible for overseeing the Unified Facility Criteria for Emergency Operations Centers.

Entrapment Area. Space at entrance to EOC for holding individuals until they are cleared to enter into the EOC.

ESQD. Explosive Safety Quantity Distance arc - distance necessary for safe placement of a facility from explosive threats.

FRP. Federal Response Plan - provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of state and local governments overwhelmed by a major disaster or emergency.

Functional Requirements Assessment. The determination during the planning phase of developing an EOC that identifies the role of the EOC and the duties that will be performed by the EOC.

GIS. Geographic Information System.

HVAC. Heating, Ventilation and Air-Conditioning - the mechanical systems that provide climate control and change the temperature, pressure and humidity of the air within the building.

ICS. Incident Command System - the common terminology, modular organization, integrated communications, unified command structure, action planning, manageable span-of-control, pre-designated facilities, and comprehensive resource management.

IIMG. Interagency Incident Management Group - a tailorable, task-organized headquarters-level group comprising senior representatives from federal departments and agencies and nongovernmental organizations.

JFO (Joint Field Office) - emergency field office integrating federal entities.

Mobile Control Centers. A vehicle equipped to perform emergency operations management that can be relocated for specific emergency incidents.

NOC. National Operations Center is the primary national-level hub for operational communications and information pertaining to domestic incident management

NIMS. National Incident Management System - system mandated by the Interim National Response Plan provides a structure for organizing emergency management operations and for managing and reporting emergency incidents.

NCP. National Oil and Hazardous Substances Pollution Contingency Plan - legislation providing for response to incidents involving hazardous substance.

NRC National Response Center - multi-agency center where oil spills, gas and hazardous liquid pipeline releases, chemical releases and radiological releases must be reported.

NRF. National Response Framework - plan that implements the domestic incident management authorities, roles, and responsibilities of the Secretary of Homeland Security as defined in Homeland Security Presidential Directive-5 (HSPD-5) Also see Interim National Response Plan.

NMCI. Navy and Marine Corps Internet.

Normalcy: when no emergency incident exists sufficient to warrant full activation of the EOC.

Nuclear power plants Emergency Planning zone. The safe distance from a nuclear power plant necessary to avoid radiation threat from an incident at the power plant.

Operational Survey. The analysis that occurs during the planning phase of development of an EOC that determines how the EOC will be organized to meet its functional requirements and the specific equipment and spaces necessary to support the operations.

Operations Group. The personnel responsible for conducting the emergency operations and working with the personnel and equipment of the various departments and groups involved in the incident.

Operations Room. A large meeting area designed to facilitate operational decision making.

Operations Suite. A controlled access area enclosing the key operation meeting areas, communications and offices of the EOC. The Operations Suite fulfills security criteria of SIPRNET standards.

Readiness is developed by assigning adequate emergency management staff, preparing plans, training those with emergency responsibilities and conducting regular emergency exercises.

Senior Watch Officer, also called Operations Section Chief. Position on duty responsible for the actual coordination of activity in the operations room.

SIPRNET. Secret Internet Protocol Router Network.

SERC. State emergency response committees - state group mandated by the Interim National Response Plan for coordinating emergencies at the state level.

Survivability. The ability of a facility to keep functioning after an emergency incident directly affects the facility.

Risk Analysis. The analysis and determination of probable incidents and their impact on a facility. The assessment is used to determine security measures necessary to protect a facility from the incidents.

Toxic Free Environment. Protection of environments from CBR threats.

WMD. Weapons of mass destruction – a weapon that kills or injures large numbers of civilians or military personnel (nuclear and chemical and biological weapons).

# APPENDIX B

# REFERENCES

**B.1.** Federal Regulations, Directives and Plans

ADA Accessibility Guidelines (ADAAG).

Comprehensive Environmental Response, Compensation, and Liability Act

Deepwater Ports Act

Emergency Planning & Community Right to Know Act (EPCRA)\National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Federal Radiological Emergency Response Plan

Federal Response Plan

Federal Water Pollution Control Act

Homeland Security Presidential Directive 5 (HSPD-5)

Interim National Response Plan

Mass Migration Emergency Plan (Distant Shore)

Outer Continental Shelf Lands Act

Uniform Federal Accessibility Standards (UFAS).

U.S. Government Interagency Domestic Terrorism Concept of Operations Plan

Federal Motor Carrier Safety Regulations 49 CFR Volume III Parts 300-399.

Federal Motor Vehicle Safety Standards 49 CFR Volume V, Parts 500-599

Federal Motor Vehicle Safety Standard (FMVSS) No. 205

Federal Motor Vehicle Safety Standard No. 207

49 CFR Part 383.3.c, Commercial Driver’s License Standards, exception for certain military drivers

49CFR Part 399, Subpart L, Employee Safety and Health Standards, Step, Handhold, and Deck Requirements for Commercial Motor Vehicles

**B.2.** Department of Defense

0.2000.12.H: DoD ANTITERRORISM HANDBOOK

DoDI 2000.18: INSTALLATION CBRNE EMERGENCY RESPONSE GUIDELINES

*JP 3-41: CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH-YIELD EXPLOSIVES CONSEQUENCE MANAGEMENT*

**B.3.** Unified Facilities Criteria (http://www.wbdg.org/references/pa_dod.php)

UFC 1-200-01 General Building Requirements

UFC 3-230-03A Water Supply, UFC 3-230 -04A Design: Water Distribution

UFC 3-230-06A Subsurface Drainage

UFC 3-230-07A Water Supply: Sources and General Considerations

UFC 3-230-08A Water Supply: Water Treatment

UFC 3-230-09A Water Supply: Water Storage

UFC 3-230-10A Water Supply: Water Distribution

UFC 3-230-13A Water Supply: Pumping Stations

UFC 3-230-14A Evaluation Criteria Guide for Water Pollution Prevention Control and Abatement Programs

UFC 3-340-13 Design: Basic Guidelines for Chemical Warfare Hardening of Facilities

UFC 4-010-01 *Design: DoD Minimum Antiterrorism Standards for Buildings*

UFC 3-410-01FA Design: Heating, Ventilation and Air-Condition

UFC 3-410-02 Design: Heating, Ventilation and Air-Conditioning (HVAC) Control Systems

UFC 3-410-03FA Design: Heating, Ventilation and Air-Condition of Hardened Installations

UFC 3-460-01 Petroleum Fuel Facilities

UFC 3-520-01 Interior Electrical Systems

UFC 3-530-01 Interior and Exterior Lighting and Controls

UFC 3-540-04N Diesel Electric Generating Plants

UFC 3-580-01 Telecommunications Building Cabling Systems Planning and Design

UFC 3-580-10 Navy and Marine Corps Intranet (NMCI) Standard Construction Practices

UFC 3-600-1 Fire Protection Engineering for Facilities

UFC 4-020-01 DoD Security Engineering Facilities Planning Manual

UFC 4-020-02 Security Engineering Facilities Design Manual

**B.4.** Military Standards http://www.wbdg.org/ccb/

MIL-STD-882, System Safety Program Requirements

MIL-HDBK-1013/1A, Design Guidelines for Physical Security of Fixed Land-Based Facilities

IA PUB-5239-22, Information Assurance Protection Distribution System (PDS) Publication (FOUO)

MIL-HDBK 1013/14, Selection and Application of Vehicle Barriers

MIL-HDBK 1012/3 Telecommunications Premises Distribution Planning, Design and Estimating.

MIL-STD-1472, Human Engineering Design Criteria for Military Systems, Equipment and Facilities

**B.5.** Army Standards http://www.usace.army.mil/publications/armytm/

U.S. Army Corps of Engineers Flood Control, web link http://www.usace.army.mil/public.html#Flood

Army Regulation AR 190-16 Physical Security, Chapter 5, Security of Critical Communications Facilities

Army Regulation *AR 420-49 Utility Services*

Department of the Army EP 500-1-1 Civil Emergency Management Programs-Procedures

Department of the Army ER 500-1-1 Civil Emergency Management Programs

USACE ETL 1110-3-502, Telephone and Network Distribution System Design and Implementation Guide

TM 5-858-1 through TM 5-858-8 Designing Facilities to Resist Nuclear Weapon Effects

TM 5-691 Utility Systems Design Requirements for C4ISR Facilities

**B.6.** Navy Standards http://www.wbdg.org/ccb/

Facility Code143-65 OPCON CENTER for FLEET OPERATIONS Facility planning criteria for Navy and Marine Corps Shore Installations

Department of the Navy OPNAVINST 3440.17 Navy Shore Installation Emergency Management Program

OPNAVINST 5530.14.D Navy Physical Security and Law Enforcement Manual

SECNAVINST 3400.4 Department of the Navy (DON) Installation Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (CBRNE) Emergency Response Guidelines

SECNAV Instruction 5200.1R Information Security

OPNAVINST 5100.23G, Navy Occupational Safety and Health Program Manual, Chapter 23, Ergonomics Program

**B.7.** Air Force Standards http://www.wbdg.org/ccb/

Command Post Air Force Instruction 10-207, 16 May 2003

Air Force Instructions 10-2501 Full Spectrum Threat Response (FSTR) Planning and Operations

Air Force (JTA-AF) Fixed Base Technical Architecture (FBTA) Design Criteria

**B.8.** Federal Emergency Management Agency (FEMA) http://www.fema.gov/

Design and Construction Guidance for Community Shelters, FEMA 361, Federal Emergency Management Agency, Section 2.2.1 provides information on hurricane and tornado design wind speeds, http://www.fema.gov/ .

Fallout Shelter Survey: Guide for Architects and Engineers, NP-10-02 National Plan Appendix Series.

Handbook of Chemical Analysis Procedures, FEMA http://www.fema.gov/

National Flood Insurance Program maps, FEMA Federal Insurance and Mitigation Administration’s Hazard Mapping Division, The Map Service Center, P.O. Box 1038, Jessup, Maryland, 20794-1038, web link - http://www.fema.gov/

**B.9.** Other Federal Agency Information Sources and Standards

2004 Emergency Response Guidebook, http://hazmat.dot.gov/pubs/erg/gydebook.htm

Central Intelligence Agency, http://www.cia.gov/.

Department of Homeland Security, http://www.dhs.gov/

Department of State, http://www.state.gov/

Director of Central Intelligence Directive No. 6/9 Physical Security Standards for Sensitive Compartmented Information Facilities. (DCID 6/9). http://www.fas.org/irp/offdocs/dcid.htm

Federal Bureau of Investigation, http://www.fbi.gov/

Frequency of Large Hail over the Contiguous United States, Joseph T. Schaefer et al, Figure 4 (A-B), NOAA/NWS/NCEP/Storm Prediction Center, Norman, Oklahoma, http://ams.confex.com/ams/84Annual/techprogram/paper_69834.htm.

HHS 2002-139 Guidance for Protecting Building Environments from Airborne Chemical, Biological or Radiological Attacks, http://www.cdc.gov/niosh/publistd.html

National Response Center http://www.nrc.uscg.mil/stats.html

NOAA National Climatic Data Center
http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Nuclear Regulatory Commission,

http://www.nrc.gov/info-finder/reactor/

National Oceanic and Atmospheric Administration (NOAA) National Climate Data Center, 151 Patton Avenue, Asheville, NC 28801, Phone (828) 271-4800, http://www.ncdc.noaa.gov/oa/ncdc.html.

Naval Oceanographic Command Detachment Federal Building, Asheville, North Carolina 28801

Personal Computer Historical Analysis (PCHA) provided by the USDA Forest Service National Systems Unit, Boise, Idaho, phone: (800) 253-5559, email at fire_help@dms.nwcg.gov.

Record Maximum 24-Hour Precipitation map provided by NOAA National Climatic Data Center, http://lwf.ncdc.noaa.gov/oa/climate/severeweather/rainfall.html.

The USDA Natural Resource Conservation Service United States Annual Precipitation, ftp://ftp.ftw.nrcs.usda.gov/pub/ams/prism/maps/usp.pdf.

U.S. Forest Service web site at http://www.fs.fed.us/land/

United States Geological Survey, National Mapping Division, 509 National Center, Reston, Virginia 20192. Web link http://mapping.usgs.gov

Wildfire Assessment System, National Interagency Fire Center (NIFC, Boise, ID), http://www.fs.fed.us/land/wfas/.

Winter Storms, the Deceptive Killers: A Guide to Survival, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service Warning and Forecast Branch (http://www.nws.noaa.gov/om/brochures/wntrstm.htm).

Industry and Professional Standards

American National Standards Institute/Underwriters Laboratories (ANSI/UL) 752 Bullet Resistant Equipment, http://www.ansi.org/

ASHRAE Standard 90.1 Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings**,** http://www.ashrae.org/**.**

ASHRAE Standard 62 Ventilation for Acceptable Indoor Air Quality**,** http://www.ashrae.org/.

Federal Information Processing Standards Publication 94 Guidelines of Electrical Power for ADP Installations, http://www.itl.nist.gov/fipspubs/.

International Building Code, International Code Council, http://www.wbdg.org/references/publications.php .

National Earthquake Hazards Reduction Program (NEHRP) Recommended Provisions for Seismic Regulations for New Buildings and Other Structures, http://www.nehrp.gov/

NEHRP Handbook for the Seismic Evaluation of Buildings, NEHRP Recommended Guidelines for the Seismic Rehabilitation of Buildings, and the Interagency Committee on Seismic Safety in Construction Standards for Seismic Safety for Existing Federally Owned or Leased Buildings and Commentary, http://www.nehrp.gov/

IESNA Lighting Handbook, http://www.iesna.org/

International Plumbing Code, http://www.iccsafe.org/e/prodshow.html?prodid=3200L03&stateInfo=jksnarvllInjpjze5725|4.

NFPA 30, Flammable and Combustible Code, http://www.nfpa.org/ .

NFPA 37 Stationary Combustion Engines and Gas Turbines, http://www.nfpa.org/ .

NFPA-70 National Electrical Code, http://www.wbdg.org/references/publications.php .

NFPA 75 Protection of Electronic Computer/Data Processing Equipment, http://www.nfpa.org/ .

NFPA 101 Life Safety Code http://www.nfpa.org/

NFPA 111, Stored Electrical Energy Emergency and Standby Power Systems, http://www.nfpa.org/.

"A Policy on Geometric Design of Highways and Streets" issued by the American Association of State Highway and Transportation Officials (AASHTO) http://www.transportation.org/

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# APPENDIX C
# MOBILE COMMAND CENTERS

Information on Mobile Command Centers is provided for informational purposes only.

**C.1. Definition**. Mobile Command Centers are vehicles or prepackaged equipment that can be relocated to wherever required in response to an emergency incident. The Mobile Command Centers provide capability for Emergency Operations team members to execute coordination and management activities in the event of an emergency incident where the facility based emergency operation center cannot be activated or maintained in response to the emergency incident. Mobile Command Centers may be one or multiple vehicles that can be driven to any location where they are needed. Mobile Command Centers can also consist of a set of shipping containers with the necessary equipment to set up and establish EOC functions at any facility where the emergency operations team can assemble. Mobile Command Centers may have the capability for providing service en route from one location to another, as well as service when they set up at a stationary site.

**C.1.1** Mobile Command Centers provide for continuous command and control capability during periods when the primary or alternate EOC will not be in operation, such as when emergency teams are transferring between a primary and alternate EOC. The Mobile Command Center also provides capability to provide command and control for localized field operations. The Mobile Command Center should provide both operations and communications capability, which may be separated into multiple vehicles that travel together.

**C.1.2** The Mobile Command Center should be equipped with basic communications equipment, computers and video display systems to provide similar support as the primary EOC. It should be of sufficient size to accommodate the equipment and the primary team members and commanders. The equipment on the Mobile Command Center should be interoperable with EOC systems in fixed facilities.

**C.1.3.** The Mobile Command Center should be maintained in a complete state of readiness. It should be self propelled or transportable without special equipment, and be capable of traveling over public roadways, including un-improved roadway surfaces.

**C.2 FEMA Mobile EOC Requirements**. The following table published by FEMA provides component and capability requirements for mobile EOC vehicles. Commanders should consider Type II or Type III vehicles.

U.S. Department of Homeland Security
Federal Emergency Management Agency

| Resource: Mobile Communications Center (Also Referred to as "Mobile EOC") | | | | | | |
|---|---|---|---|---|---|---|
| **Category: Communication (ESF #2); Command & Control**<br>**Kind: Vehicle** | | | | | | |
| **Minimum Capabilities (Component)** | **Minimum Capabilities (Metric)** | **Type I** | **Type II** | **Type III** | **Type IV** | **Other** |
| Chassis | Feet | 48‘–53‘ custom trailer, bus chassis, conventional cab/van chassis, or diesel motorhome chassis with or without slide-out room | 35‘–40‘ motorhome chassis with or without slide-out room | 25‘–35‘ Gas or diesel motorhome chassis, or custom trailer (trailer does require additional tow vehicle) | Converted SUV or Travel Trailer, or 25‘–40‘ custom built trailer (trailer does require additional tow vehicle) | |
| Interior | Workstations | 6–10 workstations, with private meeting area for Command personnel | 4–6 workstations, with private meeting are for Command personnel | 2–4 workstations | 1–2 workstations | |
| Radio Frequency Transceivers | 1 Unit | RF Communications with adjoining agencies, State agencies through mutual aid transceiver and any other frequencies | RF Communications with adjoining agencies, State agencies through mutual aid transceiver and any other frequencies | RF Communications with adjoining agencies, State agencies through mutual aid transceiver | RF Communications within jurisdiction and with adjoining agencies | |
| Internet Access | Speed | High bandwidth capabilities via satellite such as INMARSAT or V–Sat | High bandwidth capabilities via satellite such as INMARSAT or V–Sat; Faxing through cell or satellite system (4,800 bps) | Cellular system;Faxing through cell or satellite system (4,800 bps) | Via cellular system (portable) | |
| Video Teleconferencing | N/A | | | | — | |
| High-Speed Fax | Speed | | | | — | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Voice Communications through Landlines, Cell Lines, and Satellite | Type of System | PBX office-style telephone system & Cellular PBX System (ML500 or similar) | PBX office-style telephone system & Cellular PBX System (ML500 or similar) | PBX office-style telephone system | Through individual cell phones only | |
| **Minimum Capabilities (Component)** | **Minimum Capabilities (Metric)** | **Type I** | **Type II** | **Type III** | **Type IV** | **Other** |
| On-Scene Video Monitoring | N/A | Through camera/video system | Through camera/video system | | | |
| Computer-Assisted Dispatch | N/A | Yes | Yes | Yes | | |
| Computer/Server Capabilities | N/A | Hardwired and wireless LAN. Workstations should have Ethernet connection and 120 vac protected receptacle. All computer based software packages pre-installed | Hardwired and wireless LAN. Workstations should have Ethernet connection and 120 vac protected receptacle. All computer based software packages pre-installed | Hardwired and wireless LAN. Workstations should have Ethernet connection and 120 vac protected receptacle. All computer based software packages pre-installed | Basic computer systems only (power source must be provided from outside vehicle) | |
| Personnel | Function | IT Support, Driver/Operator with CDL certification, and Communications Support | IT Support, Driver/Operator, and Communications Support | Driver/Operator | Driver/Operator | |

| | | |
|---|---|---|
| Deployment Capabilities | | All types should be capable of:<br>• Operating in environment with little to no basic services, including no electrical service, no phone lines, and no cell towers<br>• Providing own power generation and fuel supply to operate a minimum of 3-4 days without refueling<br>• Sustaining long term deployment as well as short-term responses<br>• Facilitating communications between multiple agencies (Federal, State, county, and municipal agencies)<br>• Operating as forward EOC<br>• Minimal set up time<br>• Serving basic personnel needs such as a bathroom, mini-refrigerator, microwave, and coffee maker where space is available |

**C.3 Motorized and Road Going Vehicle Requirements**. Mobile Command Centers that are self-contained vehicles must be designed, equipped, licensed and operated in conformance with regulations for motorized vehicles operated on public roadways.

**C.4 Interior Equipment and Furniture**.

**C.4.1** Mobile Command Center may have desk workstations built into the vehicle. All desk surfaces must be permanently secured in place. All drawers and cabinet doors must have latch and lock systems that prevent opening during transport.

**C.4.2** All equipment, including computers, other electronic equipment, display equipment, office equipment, and emergency response equipment must be secured in place during transport, either via mechanical fastening, tie down straps, or storage in a cabinet designed to safeguard the equipment during transport.

**C.4.3** Office chairs with casters may be utilized in the operations area of the vehicle or trailer, though they may not be occupied while the vehicle is in motion. A method for securing chairs in place during transport by tie downs or other means must be provided.

**C.5 Mechanical Systems**. All occupied spaces will be provided mechanical ventilation, heating and cooling systems that are capable of operating under vehicle power, emergency power generators, or commercial power grid connections.

**C.6 Electrical Systems**.

**C.6.1** Each desk position will be supplied with 110 volt AC outlets capable of servicing standard electrical appliance including computers, radios, video monitors and recorders.

**C.6.2** Provide mobile emergency generators to maintain power to the Mobile Command Centers.

**C.6.3** Lighting. Interior work areas of the Mobile Command Centers must be designed in accordance with UFC 3-530-01. All lighting fixtures must be designed to avoid hazards during transport, with all bulbs protected in fully enclosed light fixtures with impact resistant lenses.

**C.7 Communications**.

**C.7.1** Each workstation will be equipped with a telephone outlet for connection to land line telephone service when the Mobile Command Center is setup. For Mobile Command Centers consisting of multiple vehicles, provide interconnection between each vehicle.

**C.7.2** Navy and Marine Corps Intranet (NMCI). For Mobile Command Centers with NMCI service, coordinate infrastructure design with UFC 3-580-10 Design: Navy and Marine Corps Intranet (NMCI) Standard Construction Practices

**C.7.3** SIPRNET. When the Mobile Command Center is served by SIPRNET, the Mobile Command Center will be designed to meet the following standards:

**C.7.4** Army - USACE ETL 1110-3-502 Telephone And Network Distribution System Design Implementation Guide.

**C.7.5** Navy – MIL-HDBK 1012/3 Telecommunications Premises Distribution Planning, Design and Estimating.

**C.7.6** Air Force (JTA-AF) Fixed Base Technical Architecture (FBTA) Design Criteria related to communications and information systems

**C.7.7** Video Display. Multiple video display systems should be provided within the Mobile Command Center for briefings, command center operations, news broadcasts and other displays. All video monitors must be securely fastened during transport.

**C.7.8** Radio Communication. The Mobile Command Center will need a system to support access to multiple radio communications between the various support agencies and field personnel. Capability to expand radio communications is also desirable. Headsets are recommended for use.

**C.8 Computing.** A local area network will be provided with connections at each workstation. For Mobile Command Centers consisting of multiple vehicles, provide interconnection between each vehicle.

**C.9 Security**

**C.9.1 Risk Analysis**. Perform a Risk Analysis to determine which threats are likely to be encountered, the vulnerabilities of the equipment, what persons and assets should be protected and protective measures necessary to balance the risk faced by the vehicles. Refer to the section of Chapter 3 providing a discussion of the Risk Analysis, including threat severity level, level of protection and acceptable risk level.

**C.9.2 Protection of Vehicles.** Each vehicle must be capable of being secured with locks on all doors, intrusion detection systems and theft protection system. Consider video camera surveillance of areas surrounding the vehicle depending on the risk analysis. Provision of ballistic resistant, attack resistant or blast resistant construction will depend on guidance from the risk analysis.

**C.10 Home Base**

**C.10.1** Parking. Mobile Command Center vehicles should be parked under protective cover. Depending on the climate, the protective cover may be a canopy or a

fully enclosed garage. In cold climates, freeze resistant electrical outlets should be provided for block heaters and chargers.

**C.10.2** Storage. Adequate storage must be provided for emergency supplies, equipment containers, vehicle maintenance supplies, and other supplies required for readiness of the Mobile Command Centers.

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