**EOC Design Considerations Checklist**

1. Location:

* Use results from a vulnerability analysis, needs analysis, or self-assessment in determining the location and design of EOC: Locate the EOC in an area that minimizes potential hazard impacts to the facility. Evaluate all hazards that may impact the EOC. Consider:
	+ Protection from WMD.
	+ Protection from groundwater (for any art of EOC below ground).
	+ Nearby hazards, e.g. structures, that could collapse onto EOC.

2. Access to EOC:

* Good access by roads.
* Public notification signage (small signs providing direction to EOC).
* Access roads should be passable under all situations if possible.
* Access roads elevated.
* Good connections from primary roadway systems.
* Sufficient clearance on underpasses for large vehicles.
* Site entry: primary and secondary.

3. Parking Lots:

* Designated for EOC only; restricted to individuals using EOC.
* Parking lot and site security.

4. External Structure:

* Built to (or in excess of) current building codes and regulations.
* Design features to withstand local natural hazards e.g. earthquake, strong winds, tornadoes, hurricanes, etc. (see HVA).
* Lightning Protection.
* WMD protection; Secure against terrorist assault.
* Accessible to the physically handicapped.
* Windows: able to withstand hurricane force winds; block UV light.

5. Internal Structure:

* Ensure the following are built to or in excess of code: partitions; floors, walls, ceiling treatments or electrical wiring, panels, batteries, and plumbing.
* Fire protection systems: automatic fire suppression (sprinklers); firefighting equipment; smoke detectors/fire alarms (audible and visual). FM 200 type system in data centers.

6. Plumbing:

* Ensure ability to shut off / close off from outside utility system. (Ability to secure and protect in case of contamination).
* Consider a "closed" system.
* Include a holding tank.
* Disposal adequate for extended operations. (Estimates of human waste production range from 45 to 170 Liters per day.)
* Toilet areas ventilated to outside and not recirculated through EOC.
* Vents must be secure and protected.
* If located below ground, ensure an adequate sump pump system and check valves.

7. Garbage System:

* Garbage storage facilities (in case required collection services are interrupted, suspended.)
* Storage areas ventilated, not recirculated into EOC. (Vents: secure and protected).
* Trash compactor.

8. Emergency Water Equipment and Storage System:

* Independent 14-day water supply is advisable (well, storage tank, or cistern.)
* Water supply considerations include:
	+ Potable water for drinking, food preparation, hand washing, medical/first aid. (A minimum of 38 Liters of water per day per person is recommended.)
	+ Additional water required for flush-type toilets. (95 Liters of water per person per day.) Consider chemical toilets.
	+ Additional water required for showers and waste disposal systems.
* Additional water required for mechanical equipment (e.g. cooling water for auxiliary power systems, mechanical cooling systems, firefighting equipment.)

9. Ventilation System:

* An adequate and safe air supply is important. Sufficient fresh air is required for EOC staff health and for mental alertness. Considerations include:
	+ - * + System should supply not less than 0.4 cubic meters per minute of fresh air per person to the occupied space, of which at least 0.14 cubic meters per minute is outside air. (This is sufficient to supply the necessary oxygen for breathing and to purge the air of carbon dioxide produced by breathing.)
				+ A HEPA (high efficiency particulate arrestor) pleated filter capable of filtering 99.97% of particulates 0.3 um in size should be used.
				+ Locate the air intake remote (some distance away) from the exhaust.
				+ Ensure air intake and exhaust is secure and protected (WMD).
				+ Adequate for long term operations.
				+ Adequate heating system with backup heating.
				+ Adequate air conditioning system with backup.
				+ Independent temperature control within EOC rooms.

10. Auxiliary Lighting System:

* Emergency battery operated lights with trickle chargers placed in stairwells, corridors, restrooms, etc.
* Emergency lighting for EOC operations rooms.

11. Auxiliary Power System:

* Generator size, type of fuel, fuel tank size: Sufficient capacity to furnish the necessary power to maintain the EOC fully operational 24 hours per day for a minimum of 14 days.
* Auxiliary power system sized to provide for the maximum demand loads of the EOC. Loads connected to generator should include: communications, computer, lights, ventilation, air conditioning, heating, sump, and kitchen.
* Location of generator and fuel supply: ensure protection from all hazards.
* Ensure generator exhaust system not a threat to EOC.

12. Security:

* Secure against terrorist assault.
* Use keys or combination locks.
* Ventilation / exhaust openings protected (e.g. steel grates).
* Smoke & heat detectors.
* Fire containment for important rooms (machine rooms).
* Fire extinguishers.
* No smoking policy near computer equipment.
* Fireproof containers for computer media.
* Guards at critical entrances (main gate, all building entrances).
* Authentication of employees (ID badge check).
* Burglar alarms.
* Surveillance equipment.
* Escorts for visitors.
* Personnel Security.
	+ Background checks.
	+ Periodic/random updates.
	+ Vendor agreements to check their employees.
	+ Public security policy (in writing, easily available).
	+ Train employees to watch for suspicious activity.
	+ Train supervisors to watch for possible employee problems.
	+ Established security audit procedures.
	+ Precautions against fired/leaving employees.
	+ Explicit restrictions on resource usage.
	+ Careful distribution of keys/accounts/privileges.
* Communication.
	+ - * + Password control.
				+ One-time password or challenge response.
				+ Tiger team password cracking.
				+ Encryption of channels.
				+ Protecting network cabling (eavesdropping, denial of service).
				+ Shielding (electro-magnetic interference).
				+ Firewalls.
* Operations Security.
	+ - * + Unpredictable security checks.
				+ Identify critical/targeted data.
				+ Established procedures for dealing with computer crime
				+ Established response team.
				+ Practice drills for response team.
				+ Policy for handling sensitive/confidential/trade-secret data.
				+ Spot checks of trash.
				+ Spot checks for online and available data.

13. Ease of Use by Disabled:

* Internal structure must meet the minimum standards for access and use by people with physical disabilities. (Special attention to such architectural design components as vehicular traffic routes, interior traffic routes, protruding objects, ground and floor surfaces, curbs and ramps, stairs, elevators, doors, drinking fountains, light switches, toilet facilities, kitchen and dining facilities, handrails, grab bars, alarms, telephones and accommodations.)

14. Space Requirements, design attributes:

* Minimum of 5 to 8 square meters per EOC staff member assigned to the EOC in an emergency on a sustained 24-hour basis.
* Head room of 2438mm (or greater) recommended.

15. EOC Layout / Floor plan, design attributes:

* Layout by functions to be performed. Consider space for such functional areas as: operations; planning; logistics; administration/finance; communications; policy/executive group; briefing room; press room.

16. General Guidelines:

* Layout should provide for minimum interference between operating and support areas (such as eating, sleeping, mechanical equipment, health and sanitary facilities).
* Arrange operational areas (including the Operations Rooms, communications and message centers, and executive office space) to provide maximum efficiency in the interchange of essential information.
* Locate EOC staff sections adjacent to the displays pertaining to their activity to allow for ease of posting and ready reference.
* Position functional groups with adequate spacing between them to minimize noise levels.
* Locate staff groups and agencies near their communications.
* Provide for storage of work supplies and personal belongings.

17. Communication and Warning Equipment:

* Equipment often becomes inoperative due to lack of power or damaged components.
* Ensure mitigation measures to protect these systems against hazards.
* Ensure outside radio antennas are secured.

18. Display Equipment:

* Visual displays offer an excellent means for sharing information quickly and efficiently. Displays should permit immediate access to intended users by sight without interruption.
* 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 must 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).
* 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 record, thus avoiding loss of valuable information as operations proceed.
* 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, such as the Coordinator’s office. Computers must have a reliable power source, independent of the commercial power source, and must be tested for operability on alternate power- sources.
* Computer Displays:

Should be free from disturbing glare and reflections.

There should be appropriate contrast between the screen and its background.

Natural light should be avoided.

Adjustable coverings should be provided for any windows.

* Displays should include:
	+ 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.

19. Furnishings, Furniture, Office Equipment, and Supplies:

* Furnishings should be light and support mobility. It may be necessary to re-configure the EOC during an event. Bulky, heavy, cumbersome equipment/supplies will hinder, rather than help.
* Provide adequate desks, tables, and chairs.
* Provide adequate work surfaces for maps, support equipment, etc.
* Office Equipment and Supplies (see EOC Equipment / Supplies Checklist).

Spare parts and tools on hand for equipment.

Maintenance schedules for equipment.

Supplies for a minimum of 14 days are maintained and rotated.

20. Sanitary Facilities, Equipment, Supplies:

* Sanitary facilities will be necessary to maintain the EOC for extended periods. Facilities, equipment, supplies sufficient to meet needs for 14 days. Consider:
	+ Toilets.
	+ Showers.
	+ Laundry Facilities.
	+ Garbage Disposal.
	+ Backup sanitation kits and plenty of extra supplies such as toilet paper; supplies maintained and rotated.
* Vendors.

21. Food and Water Supply:

* Water Supply:
	+ Minimum supply of 38 Liters of water per day per person.
	+ Alternate sources of water; Arrangements to ensure availability in an emergency.
	+ Additional supplies to satisfy mechanical and other requirements for water.
	+ Water available for showers, waste disposal systems, firefighting equipment, etc.
	+ Emergency bottled water available for drinking and cooking.
* Food Supply:
	+ Food stocks for 14 days per person.
	+ Avoid sugar-laden and fat-filled foods such as hot dogs, hamburgers, candy bars, donuts, and pastries. Sugar can cause irritability, hyperactivity, and depression. Fats cannot provide the fuel that emergency personnel need to handle intense activity levels. More suitable foods include plain granola bars, fresh and dried fruits, milk, hard cheeses, whole-grain breads, crackers, and fresh vegetables.
	+ Avoid overuse of caffeine and sugar-laden beverages; alcoholic beverages should not be available.
	+ System to rotate food supplies.

22. Kitchen Equipment, Supplies:

* What and how much will depend upon the type of food supplies stored and the preparation needs. Consider:
	+ EOC cooking facilities?
* Minimum capability:
	+ Coffee urns, pots, other hot drink capability.
	+ Hot plates.
	+ Microwave oven.
	+ Refrigerator.
* Paper plates, cups, bowels, plastic utensils.

23. Sleeping Accommodations:

* Some type of sleeping arrangements should be available to accommodate at least half of the EOC staff. Two or three tier bunks can be used to conserve space. Sleeping bags and portable beddings should be readily available. Consider:
	+ Sleeping accommodations sufficient for the emergency staff (recommended facilities so that 50% of EOC staff can sleep / rest at one time).
	+ Resting facilities located in a quiet location.
	+ Lockers for personal clothing, equipment, hygiene supplies (federal guidelines recommend 0.1 cubic meters per person).

24. Medical Equipment, Supplies:

* See “EOC Equipment/Supplies Checklist" for more information.
* There should be at some first-aid capability. Ensure that EOC staff trained in first aid procedures.
* Equipment and supplies sufficient amounts to meet needs for 14 days (as per federal guidelines).
* First aid kits with extra supplies of bandages and antiseptics should include medicines to treat diarrhea, headaches, constipation, and some respiratory problems.
* Consider having a medical professional assigned to the EOC.

25. Janitorial Services, Supplies:

* Supplies to properly store and dispose of trash.
* Ensure provision for janitorial service during EOC operations.

26. Maintenance and Spare Parts:

* Tools and spare parts for the physical plant: lighting, communications, ventilation, heating, auxiliary power, plumbing, etc.
* Lubricants for equipment as applicable.
* Ensure procedures in place to maintain support systems and equipment.
* Ensure inspections and maintenance schedules.
* Ensure a database tracking system for inspections and maintenance schedules.
* Data base includes:
	+ Description of equipment, including model number, serial number and manufacturer.
	+ Vendor(s) name, address, and phone number.
	+ Contract number and account information.
	+ Date equipment was purchased or leased.
	+ Last scheduled inspection/maintenance.
	+ Next scheduled inspection/maintenance.
	+ Expiration date of contracts.
* Special Equipment, Clothing, design attributes:
	+ Breathing apparatus and protective clothing for hazmat spills, toxic gas leaks, etc. available for EOC staff.
	+ Cold weather clothing (if heating fails) available for EOC staff.
	+ Other special equipment or clothing needs.
	+ Ability to deal with future technologies and design attributes.
* Use of EOC Space:
	+ Length of time required to activate physical facility (Federal guidelines recommend 30 minutes).
	+ Ensure checklists are posted to rapidly convert to EOC.
	+ Ensure regular exercises to practice converting to EOC use.
* Lightning:
	+ Proper grounding and protection.
* Environment:
	+ Temp control (AC).
	+ Humidity control.
	+ Separate AC for computer rooms.
	+ Alarms on temp/humidity control equipment.
	+ Air filters.
* Electricity:
	+ Clean electricity supply.
	+ Uninterruptible Power Supply.
	+ Anti-static carpet.