ANNEX B
EMERGENCY RELOCATION SITES
PLANNING AND OPERATIONS GUIDELINES

B-1. SELECTION CRITERIA.

a. A major HQUSACE work group has formulated classified strategic guidance for the field for Emergency Relocation Site (ERS) planning (expect this to be published summer 85).

b. Selection of an ERS is the responsibility of each commander.

c. Establishment of an ERS is required whether or not a division, district, or FOA headquarters is located in a high-risk area designated by FEMA TR-82. This is so because of the uncertainty in predicting a nuclear strike and the need for USACE to be prepared to function under any laydown scenario. However, the TR-82 should be used as a guide in selecting the ERS.

d. If the placement of an ERS within a high-risk area is necessary or deemed appropriate by subordinate commanders, the specific location of the ERS shall be approved by the next higher command. If outside the divisions civil works boundaries, the location shall be coordinated with the appropriate division commander and other authorities having jurisdiction over the location and approved by DAEN-CWO-E.

e. The site shall be reasonably accessible by ground transportation by the emergency staff.

f. Government-owned facilities shall be used if possible.

g. When considering a non-USACE facility as an ERS, it is essential that extensive coordination be conducted with Real Estate and other elements to ensure availability of the facility for occupation during an emergency. The selection process should be carried out with the district real estate office that will write the real estate planning report that lists the alternative sites examined. Likewise, coordination with FEMA and state governments is necessary when USACE facilities are designated as ER's to prevent potential problems or conflicts with crisis relocation planning.

h. Facilities shall be capable of accommodating the emergency staff and expanding to meet estimated post-attack capability assessment activities and reporting requirements of JCS Pub. 6.

i. Conflicts or problems regarding selection of an ERS shall be submitted to CDR USACE (DAEN-CWO-E), WASH DC 20314-1000 for resolution prior to expenditure of significant resources.

Note: This annex incorporates considerable amounts of information and research developed and submitted by the Middle East Division (Winchester).

j. It is desirable that each subordinate command establish a separate ERS. However, relocation by two or more commands to the same ERS is authorized.

B-2. EMERGENCY RELOCATION SITE STANDARDS.

a. These standards apply to ERS facilities utilized by emergency staff. Standards for any billeting of dependents and non-emergency staff at other protected sites are left to the discretion of individual commanders, and are to be developed within existing funding levels (AR 500-3).

b. Minimum protection factor of 100. This PF number may be excessive for some geographic areas. A shelter with a protection factor of 100 means that a person inside the shelter would be exposed to a radiation dose rate of 1/100th of the exposure in the same location if unprotected. (Classified guidance available from HQUSACE is beyond the scope of this ER)

c. If the ERS must be located within a high-risk area, existing hardened or semihardened facilities shall be utilized.

d. Space. (Criteria are provided only for general guidance, local conditions may require adjustments)

(1) Office/Work stations - 50 square feet (sq ft) per person.

(2) EOC - 50 sq. ft. per person.

(3) Sleeping - 55 sq. ft. per person.

(4) Dining - 10 sq. ft. per 50% of assigned personnel.

(5) Relaxation - 10 sq. ft. per 20% of assigned personnel.

(6) Storage space as required.

e. Civil defense (CD) or equivalent medical kits shall be provided in all shelters. Divisions shall contact FEMA regions for information regarding procurement of CD kits. Drugs or other medical supplies subject to theft shall be protected in a secure location.

f. Sufficient food stocks to provide a minimum of 2500 calories per day per person shall be required for 30-day occupation.

g. Emergency source of water is essential. Potable water may be obtained from a well within or adjacent to the facility, covered or underground storage tanks, trapped water available in the building system, or water stored in drums. If storage tanks are used, they should be placed in the normal service line to assure a fresh supply and be equipped with shut-off valves at appropriate points. Sufficient water capacity to provide a minimum of 10 gallons per day per person for drinking and sanitary purposes, plus any other requirements for equipment or essential operations shall be required for a 30-day occupation.

h. Sanitation construction standards for water closets, lavatories, and showers should be provided per local building codes. Chemical toilets may be used where more practical.

i. Provision for emergency power shall be made. If emergency generators are used, sufficient fuel to last 30 days shall be provided.

j. Additional guidance for shelters is contained in AR 500-3.

k. Emergency relocation sites shall be maintained so as to be fully operable within two days following notice to relocate. Supplies shall either be in place or plans shall be developed to ensure prompt emergency stocking upon receipt of a relocation order.

l. Construction activity shall be limited to rehabilitation of existing structures. This shall include exterior work to increase security, decontamination capabilities and radiation protection, and interior alterations directly associated with essential facility functions, such as security, fire protection, personnel decontamination, stockage equipment storage areas and blocking in windows. Purchase of materials to be used for beneficial improvement to ERS interior space may be funded if such improvement shall be accomplished by ERS forces during the in-shelter period.

m. If location of an ERS within a high-risk area is considered, an analysis indicating that the structure can withstand the expected overpressure and dynamic pressure, or existing certification thereof, shall be submitted to the command approving the ERS. If location of an ERS within a high-risk area is approved, limited blast protection construction may be considered by the approving commander. All ERS modifications shall compete with other national emergency preparedness activities for available funds in the budget process. Therefore, all ERS modifications proposals shall be sufficiently justifiable in terms of survival and performance of essential functions.

n. Minimum essential communication requirements will be addressed in USACE EOC guidance (to be published).

B-3. GEOGRAPHIC CRITERIA:

a. Outside Target Area: By definition, an ERS is a site located outside a prime target area to which all or portions of a civilian or military headquarters may be moved. The ERS location must provide adequate protection from blast, heat, fire, and radiation. Although no area of the United States is safe from fallout, prevailing winds and target locations provide areas with a higher probability of reduced radiological hazard in the event of a nuclear attack. In that the danger zone for heat and fire are smaller than the danger zone for blast over-pressures, the effects of nuclear blast over-pressures are used as the primary consideration to identify safe distances from targets. The hazard zone, of course, depends upon the size of the explosion. For planning purposes, a location which limits the maximum over-pressure to 1.0 p.s.i. was used. For a 1 MT surface burst, the less than 1.0 p.s.i. over-pressure zone starts at approximately 7.0 miles from point of impact. For a 5 MT surface burst the distance is approximately 13 miles and for a 25 MT

surface burst the distance is approximately 22 miles. The High Risk Areas identified in FEMA TR-82 were made on a worst case basis (large bursts in the general area of targets). TR-82 has not been updated to reflect potential new targets and the trend to deploy more accurate delivery systems with smaller yield weapons. Knowledge of local conditions (i.e., identification of potential targets) and the limits over-pressure zones defined above should be used in conjunction with TR-82 to establish the geographic areas which are outside of potential target areas. In general, a site that is 22 miles or greater from a potential target will be safe as far as blast over-pressure is concerned.

b. Fire Hazard: The hazard of primary fire ignition, as stated above, diminishes more rapidly than does the over-pressure hazard. At safe over-pressure distances there is only a slight danger of primary fire ignition. However, it is possible for fire to spread via conflagration from the primary ignition zone through areas of dense frame construction or wooded areas. This hazard shall be avoided through proper site selection
for the location of the ERS.

B-4. DESIGN FEATURES WHICH ENHANCE RADIATION PROTECTION FACTORS:

a. Does the facility obtain benefit from mutual shielding from adjacent buildings? (In other words do adjacent structures limit the exposure of the facility to fallout exposure?)

b. Does the site slope down away from the facility and thus reduce the direct wall exposure to fallout?

c. Does the facility have earth berms or planter boxes against the wall which will increase the protection factor for the walls?

d. Does the facility include screen walls, retaining walls, or planter boxes (three feet minimum height) which will limit the shelter wall exposure?

e. Is the proposed shelter area in the basement of the facility?

f. Is the proposed shelter area at least partially depressed below ground level?

g. Are there a minimum number of openings in the wall (windows, etc.)?

h. Has roof resistance been maximized by not using any skylights?

i. Are interior corridors located so that they provide additional protection rather than serving as a conduit from the outside to the shelter area?

j. Are stairwells positioned to provide additional barrier shielding?

k. Does the facility used dense (concrete) walls on the exterior?

l. Are interior walls of dense construction?

m. If hollow block wall construction was used, have the voids been filled with sand, gravel, or grout?

n. Are interior walls located to block entry of radiation into the shelter area?

o. Are openings in partitions and exterior walls staggered so as to avoid direct penetration of radiation to the shelter area?

p. Are doorways provided with a stub-wall baffle to reduce radiation penetration?

q. Is the shelter area protected by more massive wall and ceiling construction than normal?

r. Does the roof structure provide enhanced protection?

s. Does the method of ventilation to the shelter contribute to its protection factor? (Fallout does not remain airborne for an extended period. A ventilation system can compromise protection if it provides an unprotected path to the outside. This can be often eliminated by the use of baffles in the system.)

t. Are materials readily at hand (or can they be stored nearby) to enhance the protection of the facility, or can temporary modifications be accomplished rapidly? Such items might include:

(1) Deep plowing the adjacent site to reduce field radiation to the shelter.

(2) Bulldozing berms to enhance shielding.

(3) Spreading of earth on the roof structure.

(4) Placement of sandbags in wall openings or to create screen walls.

B-5. PROTECTION FACTOR RANGES FOR VARIOUS STRUCTURES:

TYPE OF STRUCTURE	PROTECTION FACTOR RANGE
Underground shelters (3 ft earth cover or equivalent). Subbasements of multi-story buildings.*	1,000 or greater
Basement fallout shelters (heavy masonry residences). Basements without exposed walls of multi-story masonry buildings.	250 to 1,000

* Multi-story buildings are those having from 3 to about 10 stories.
**High-rise buildings have more than 10 stories.

Central areas of upper floors (excluding top three floors) of highrise buildings - with heavy floors and exterior walls.	250 to 1,000
Basement fallout shelters (frame and brick veneer residences). Central areas of upper floors (excluding top floor) of multi-story buildings with heavy floors and exterior walls.	50 to 250
Basements without exposed walls of small one or two story buildings.	10 to 50
Central areas of upper floors (excluding top floor) of multi-story buildings with light floors and exterior walls.	10 to 20
Basement (partially exposed) of small one or two story buildings with heavy masonry walls.	2 to 10
Above ground areas of light residential structures.	2 or less

B-6. OPERATIONS. Continuity of operations activities at the ERS consist of radiological monitoring, assessment of capabilities, and reestablishing operations. Commands at all levels shall provide assessment reports to higher headquarters by the fastest communications mode. See Annex P to this publication.

B-7. RADIOLOGICAL DEFENSE PROGRAM.

a. Scope. A Radiological Defense (RADEF) Program is essential to minimize effects of radiation hazards in the event of a nuclear attack and to facilitate recovery efforts. RADEF provides:

(1) Shelter monitoring to assess and evaluate protection of occupants against radiation.

(2) Radiological monitoring for self-protection of personnel engaged in emergency services functions, operation of primary facilities, and in recovery operations.

(3) Recovery techniques including decontamination and related countermeasures.

b. Responsibilities. There are three types of RADPS personnel; radiological officer (RO), radiological response team member (RRT), and radiological monitor (RM). The RO organizes and manages the facility RADPS, develops response plans coordinating the facilities EOC and RRT activities, and advises the facility commander on matters pertaining to radiological protection and safety. The RRT completely assesses the situation and makes

interim protective actions while keeping the EOC informed of actions taken. The RM identifies the hazard and takes immediate initial protective action while keeping the RRT informed of actions taken. Divisions, districts, and FOA shall train at least two RDs, four RRTs, and a minimum of 10 percent Rms for each ERs and primary facility analyzing radiation hazards and recommending appropriate measures for reducing radiation exposures. Divisions, districts, and FOA shall train at least two RDOs for each ERs and primary facility. A minimum of 10 percent RMs are required of the total number of USACE personnel at the ERS or primary facility.

c. Training. As soon as possible after an attack, the radiation environment must be assessed and the actual hazard evaluated. This can be done only with radiation monitoring instruments used by people who know how they operate and how to analyze the readings. FEMA has developed a comprehensive RDO and RM training program available at local, state, and regional or national levels, depending upon the type of training needed. A listing of available RADPS training is to be published under separate cover by DAEN-CWO-E. The Safety and Occupational Health Division (DAEN-ECS) shall review all questions or problems associated with applying FEMA training to USACE operations.

d. Equipment. Radiological monitoring equipment is federally procured and is maintained at state maintenance and calibration centers. USACE equipment requirements can be satisfied by the appropriate state radiological defense officer. Recommended RADPS instruments to be used are:

QUANTITY	NOMENCLATURE	
2	Survey Meter	CD V-715, (0-500 r/hr)
2	Survey Meter	CD V-700, (0-150 mr/hr)
1	Dosimeter Charger	CD V-750
3	Remote Survey Meter	CDV-717, (0-500 r/hr)
one per person	Dosimeter	CD-V-742

e. Readiness. The entire RADPS system shall be exercised annually to evaluate operational procedures, maintain technical competency, and determine need for additional equipment and training for both shelter and recovery operations. The results of these exercises shall be reported to the next higher authority.

B-8. REFERENCES.

a. North Central Division Pilot ERS Protection and Consolidated Review Comments from OCE.

b. CERL Technical Report P-147, "Design Information for Emergency Operations Centers", June 1983.

c. ER-500-1, Emergency Operations Center, to be published.

d. FEMA TR-82, "High Risk Areas," September 1979.

e. FEMA CPG 1-3, Chapter 5, "Emergency Operating Centers," January 1984.

f. FEMA, Operational Readiness Survey Report, Federal Emergency Operating Facilities, undated.

g. FEMA TR-20 (Vol 1), Shelter Design and Analysis, June 1976.

h. FEMA TR-20 (Vol 2), Shelter Design and Analysis, February 1976.

i. FEMA TR-30, Protective Construction, August 1981.

NOTE -- In considering the 1985 Energy and Water Resources Development Appropriations Act, Congress deleted language that read: "Funds appropriated to the Corps of Engineers -- Civil, Operation and Maintenance, General account may be used to acquire and develop emergency relocation sites for the various offices of the Corps of Engineers." The conference committee directed the Corps to "prepare a detailed plan outlining the purpose, number, and costs of emergency relocation sites proposed in connection with its National Emergency Preparedness Program." That plan is now being prepared at HQUSACE and will be submitted to Congress shortly.

Pending Congress' response and future guidance from HQUSACE, expenditures for permanent emergency relocation sites shall be limited to those necessary for operating and maintaining existing sites. Acquisition (i.e., purchase or lease) of new sites and development (i.e., significant improvement) of all sites must await Congressional approval.

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