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Annex 8

ROLE OF CIVIL DEFENSE (U)

(U) The primary and contributory objectives of Strategic Defense are to: enhance deterrence; provide stability in a crisis, and achieve damage limitations: Effective strategic defense consists of two essential inter-linking capabilities: passive and active defense.

GENERAL COMMENTS (U)

(U) Factors of passive defense which significantly contribute to strategic defense include the following: evacuation and shelter protection of population and of leadership and industrial defense.

(U) Industrial defense can protect critical industries and/or equipment, essential resources, and key skilled labor force. The resultant capabilities of such a passive defense should be perceived by the enemy(ies) as to enhance deterrence in a crisis, and should perform effectively if deterrence fails and the nation is subjected to nuclear attack - of short or long duration.

(U) Civil defense has a reputation for being unacceptable by a vocal minority of our society and by the major news media. The aspects of civil defense are complex and thus readily susceptible to misintepretation and benign neglect. However, from extensive public surveys, and based upon past experiences, it is posited that with steadfast leadership programs can be expected to generate public and Congressional acceptance. A necessary component of this leadership must be evidence that the Defense Department and the military

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services recognize passive defense as an essential component of national defense, war deterrence, and warfighting.

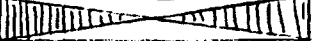
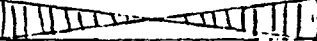
CIVIL DEFENSE AND OTHER NATIONAL  
PROTECTION PROGRAMS (U)

(U) A U.S. ability to protect population by evacuation and sheltering should be available to counter Soviet evacuation moves or threats and thus provide the President with appropriate options for crisis management. For the case of short warning the use of in-place shelters in risk areas is an alternative to population evacuation.

(U) For longer duration, in-place sheltering should be viewed as a back-up to evacuation. Additional supporting elements are communications, radiological monitoring, shelter management training, emergency operating centers for all levels of government and resources for life and economic support. The described overall population program, which has been named program D plus, is estimated to cost about \$3.4 billion in 1982 dollars if deployed within the next five years (this does not include O&S costs). Such a program should include an RDT&E program to provide options to add-on measures for a higher degree of in-place shelter protection of population. Such a civil defense program is deemed to be an important element of strategic defense.

(U) Population protection via crisis relocation, see Figure 8.1, could reduce potential U.S. fatalities from about 130 to 150 million to about 50-65 million. While this reduction is significant it still leaves a large relative asymmetry between the U.S. and U.S.S.R. This differential, results, in part from the extensive Soviet program which has been ongoing for over three decades and its much higher per

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	UNITED STATES (ALL GROUND BURST WEAPONS)		USSR (MIX-GROUND & AIR BURST)	
	NO ORDERED EVACUATION	CITY POPULATION EVACUATED	NO EVACUATION	CITY POPULATION EVACUATED
Day to Day - RED FIRST	130 <sup>1</sup> - 150 <sup>2</sup>		50 <sup>7</sup> - 100 <sup>8</sup>	
Generated - RED FIRST	90 <sup>3</sup> - 140 <sup>4</sup>	50 - 65 <sup>5</sup>	35 <sup>9</sup> - 50 <sup>10</sup>	5 <sup>11</sup> - 25 <sup>12</sup>
Generated - BLUE <sup>6</sup> FIRST	90 - 140	50 - 65	35 - 50	5 - 25

<sup>1</sup> No evacuation, Program D or enhanced (2.4-3.4B, 82\$)\*  
 plus 2.8B 10 year O & S

<sup>2</sup> No evacuation C.D. at current levels (.7B, 82\$)\*  
 plus 1.3B, 10 year O & S  
 \*5 year program costs

<sup>3</sup> 30% spontaneous, educated evacuation - Program D

<sup>4</sup> 10% spontaneous, random evacuation - current program

<sup>5</sup> Lower value 80% evacuation; upper value 60% evacuation  
 could be 35 m. w. increased \$s more costly fallout  
 protection

<sup>6</sup> Assumes that, independent of who strikes first, Soviets  
 impact from a generated posture 4600 EMT, all  
 ground bursts, of which 1800 EMT on U/I Targets

<sup>7</sup> No evacuation, 50% urban in shelters

<sup>8</sup> No evacuation, shelters no used.

<sup>9</sup> 20% spontaneous evacuation; 50% urban in  
 shelters

<sup>10</sup> 10% spontaneous evacuation, 50% urban in  
 shelters

<sup>11</sup> 88% evacuation, remaining city population  
 in shelters; evacuate population in  
 expedient shelters

<sup>12</sup> 70% evacuation, remaining city population  
 in shelters, evacuated population in  
 expedient shelters

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FIGURE 8.1: (U) U.S.-USSR NUCLEAR EXCHANGE - FATALITIES (in millions)  
 ATTACKS AGAINST MILITARY AND INDUSTRIAL TARGETS

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capita annual expenditure (about \$8.00) than the steadily decreasing funding of the U.S. program with current expenditures at levels of about \$.50, \$2 to \$3 with program D or D plus.

(U) Protection of industry could be implemented by various means. The best known and tested method is in-place protection of plant machinery. The nationwide costs for training and preparation of such a program (not implementation) are estimated by FEMS at about \$3.5 billion.

(U) There are other options which could be combined with this in-place protection such as relocation and dispersal of critical equipment and plant protection. To date there is inadequate information on the cost and effectiveness of these alternatives.

(U) An adequate military shelter program is an important step. The protection of military and essential federal personnel cannot lag behind a nationwide civil defense without undermining federal leadership and the needed retention of law and order and public safety.

#### ASPECTS OF INDUSTRIAL PROTECTION (U)

(U) Broadly speaking, the elements of an "essential" industrial base which must be protected are the corresponding labor force, the machinery, capital and raw materials necessary for production.

(U) It should be recognized, that in a national emergency, the U.S. may have to adopt a degree of centralization for economic planning and for resource allocation. In fact, the related emergency mobilization planning and

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preparedness would have to be undertaken well in advance of any national emergency. This centralization would be required to an even higher degree in the trans-attack and post-attack periods. There is a need to preserve such a function so that it survives and endures.

(U) Assuming the need for centralized planning in a situation of grave national emergency, this function could be performed by Presidential directive initially through FEMA, by expanding FEMA's capabilities or by instituting the Office of Defense Resources (ODR). The functions of FEMA/ODR would be based upon the emergency preparedness plans to adjudicate demands between military and "essential" civilian requirements and to allocate resources accordingly. The above FEMA/ODR activities should be performed effectively during the various phases of a national emergency, i.e., in crisis, in war, and in the post war phases of survival, reorganization and eventual recovery.

(U) The current U.S. labor force is estimated at about 100 million, but this work force does not bear any close relationship to the "essential" activities and related work force that would be needed in a national emergency. To date inadequate attention has been given in defining the demands for: (1) military supply industries; (2) essential civilian industries; and, (3) lifeline services and related industries supporting both civilian and military elements. Obviously the resulting value added of these functions will, under most conditions, be lower than in peacetime, although its magnitude will vary greatly within the level and type of national emergency, its foreseen consequences, and the time required to implement these activities. First-guess

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estimates of the related "key-work" force indicate that it may vary between 20 and 30 million of which 14 to 20 million be in the risk areas.

(U) Assuming that the above "key-work" force could operate on a two or three shift basis, this would generate, at minimum, a need for about 5 to 10 million blast/fallout shelters at or near the place of work. The related peacetime costs of such shelters are estimated to range between 1 to 2 billion dollars.

(U) However, protection of the labor force, by itself, is not sufficient. Motivation of the work force is a crucial item. Experience in natural disasters and World War II bombing has shown that people will follow orders provided the orders make sense and their families are safeguarded. A common experience in World War II was adults crossing target zones during heavy bombing to try to find their families when there had been inadequate civil defense planning. With planning and assurance that families were safeguarded, workers followed orders, stayed near their jobs and repaired damaged equipment over and over again. For a work force to stay during a threatened nuclear crisis, there would have to be an excellent civil defense program so each worker knows his family is safer than they would be if he spent (optimistically) three to four days digging an expedient shelter for them. Such a program could be implemented through the factory by family relocation or by in-place suburban shelters. Each worker would also have to be assured there is an adequate blast shelter within a few minutes running distance. With assurance that families are safe, that there are good blast shelters at the installation, and with work that makes sense; experience indicates that workers will stay and follow directions.

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### In-Place Protection of Machinery (U)

(U) Tests have shown that industrial plant machinery of many types can be protected against the principal disabling effects of nuclear weapons -- fire, debris and shock. These encouraging test results naturally lead to the large question -- could the simple, easily accomplished, protective technology be adapted to and implemented by industry on a national scale?

(U) Before discussing implementation feasibility of protective schemes, a brief discussion of the fundamental concept is appropriate. A large proportion of metal cutting, shaping and similar machinery can be protected by the protective method illustrated schematically in Figure 8.2 below:

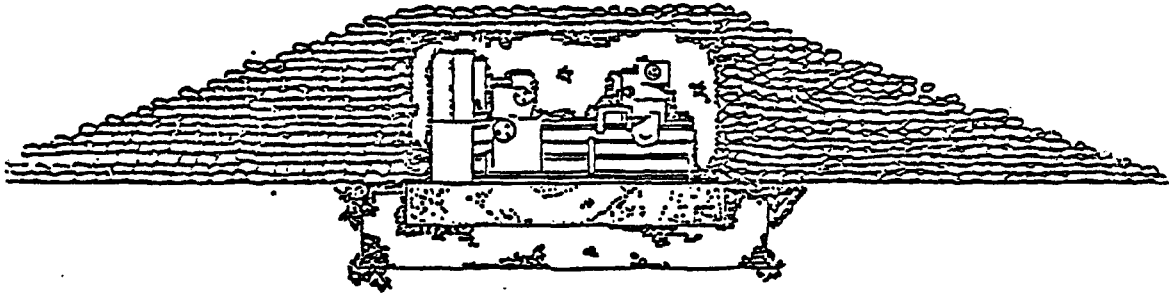


FIGURE 8.2: (U)

(U) Protection is achieved by supporting the machine or the machine foundation on a crushable material, surrounding it with crushable material, and then covering it with dirt. The purpose of the crushable material is to insulate the

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machine from the nuclear-blast-induced ground shock in much the same manner that fragile items are protected from the shocks encountered in parcel post.

(U) Fundamentally, the concept is this: In the event of an extremely grave crisis involving confrontation with the U.S.S.R., we could take these steps necessary to protect selected amounts -- say about one-third -- of the essential machinery in our plants. By rescheduling the workshifts, we could maintain full production on the machinery left unprotected. We estimate that the present labor force could make these preparations in about three days, which may be less time than it would take for the Soviets to complete their evacuation and sheltering process.

(U) The fraction of equipment that requires protection should be considered as a variable, since industries in peacetime vary in shifts--some one per day others three-per-day. Thus, in general the multiplicative factor for round-the-clock operation may vary, in crisis, roughly between 1.4 to 3 times peacetime operation.

(U) It should be recognized that a proper balance would have to be achieved between the discussed protected machinery and the unprotected one. The "cocooned" machinery cannot obviously be utilized until the crisis or war is over. However, in crisis as well as in war (depending upon its character and duration) the essential economy of the U.S. would have to be functioning to the best of its ability. Additional consideration needs to be given to protection of power generation, as well as to the required material resources. There is another degree of protection that should be considered, primarily for small plants, which would

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support the evacuated population. Some of these could be relocated to non-risk areas to adequately prepared facilities.

### Protection of Special Purpose Plants, Refineries, etc. (U)

(U) The methods described above suggest that expedient industrial protection of certain type of industrial machinery could be implemented. Such a scheme of protection could provide a modicum of industrial base which can be activated once the crisis or war is over, in the latter case contributing post war recovery. However, there are other types of special purpose plants such as oil refineries and large chemical plants processing hazardous substances which do not lend themselves to this type protection. Studies of these plants show that unless the explosive or combustible products can be removed a significant distance from the plant (a task not easily accomplished because of the large quantity of product contained and the general lack of alternate storage facilities) even low overpressure levels will produce sufficient damage by conflagration.

(U) Within the U.S. there are a total of 324 refineries all highly vulnerable to a nuclear attack and/or sabotage. These refineries handle 18,660,267 crude barrels per calendar day. If one assumes that in the early postattack period the demand can be reduced to 10-15 percent of these prewar requirements, then a study made by the Center for Planning Research (CRP), subsequent conversations with CRP and with Howe-Baker Engineers of Tyle, Texas, established that a 4,000 barrel/calendar day facility could (with some ingenuity re the distillation tower) be truck transportable, if this 10-15% of prewar requirements is limited to diesel fuel

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production. This requirement could be fulfilled by storing, and in crisis deploying something like 470 to 850 movable installations.\* The related proliferation and mobility would most certainly complicate the Soviet attack on these critical soft facilities.

CONCLUSION/RECOMMENDATIONS (U)

(U) The impressive Soviet progress in developing a civil defense, based on evacuation and protection of essential government leadership (civil and military) and of industry (resources and key workers), has reached a point at which it is affecting perceptions of the strategic balance between the U.S. and U.S.S.R. civil defense programs.

(U) Civil defense measures carry a visible signal that there are plans for national survival and recovery should deterrence fail. The Soviet signal has had this effect, by stressing not only their military capabilities, but also complementing these with a large and expensive civil defense program. Combined passive and active defense methods can result in a synergism which exceeds in effectiveness the sum of each individual defensive measure.

(U) Apart from the deterrence and damage-limiting potential of civil defense, the President has a clear requirement, in a nuclear crisis, to be able to bring the civilian population and industry into various stages of alert.\*\* National security would depend on his ability

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\* These transportable facilities represent a 2.7 to 4.2 fold increase in current low capacity refineries.

\*\* It should be noted that industrial mobilization is a more lengthy process than expedient population protection.

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to maintain public confidence and to minimize spontaneous and panicky behavior. This requires preparedness plans for the guidance of U.S. population and proper programs and responses should the Soviets evacuate and/or protect their population. Without a U.S. civil defense, the resulting asymmetry may lead, in a crisis, to effective Soviet coercion, certainly of our primary allies and likely of our people.

(U) A summary of specific conclusions and recommendations can be found in Figures 8-3, 8-4, and 8-5.

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CONCLUSION - GENERAL

- THERE ARE A COLLECTION OF LOW-COST, WELL-CONCEIVED, EFFECTIVE CIVIL DEFENSE MEASURES FOR PROTECTION OF THE CIVIL POPULATION FROM FALLOUT AND INCIDENTAL PROMPT EFFECTS.
- THEY HAVE FAIR EFFECTIVENESS EVEN FOR UNWARNED ATTACK AND CAN BE FULLY EXPLOITED IN ABOUT THREE-SEVEN DAYS.
- CONTRARY TO COMMON BELIEF, HISTORICAL AND PUBLIC OPINION DATA INDICATE GOOD SUPPORT IN CONGRESS, PUBLIC.
- PROBLEM IS SUPPORT FROM EXECUTIVE IN BUDGET AND PUBLIC COMMITMENT.
- IMPLEMENTATION OF SUCH MEASURES WOULD ENHANCE DETERRENCE AND PROVIDE NCA WITH USEFUL CRISIS MANAGEMENT TOOL.
- BEYOND THESE, THERE ARE ADDITIONAL MEASURES FOR PROTECTION OF INDUSTRIAL FACILITIES AND ECONOMIC CONTINUITY. SOME ARE WELL UNDERSTOOD AND LOW-COST, OTHERS NEED R&D. AN OVERALL INTEGRATED ANALYSIS IS NEEDED WHEN THESE ELEMENTS ARE BETTER UNDERSTOOD.

FIGURE 8.3: (U)

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RECOMMENDATION - GENERAL

- DOD SHOULD ACTIVELY SUPPORT IMPLEMENTATION OF A SENSIBLE CIVIL DEFENSE PROGRAM BY FEMA CONSISTENT WITH CONCLUSIONS ABOVE, BY
  - SECDEF PERSONAL AND PUBLIC SUPPORT
  - DOD IMPLEMENTATION OF ITS OWN PASSIVE PROTECTION PLAN AS SET FORTH IN RECOMMENDATION \_\_\_\_\_.
  - USDRE OFFERING ITS GOOD OFFICES TO ASSIST FEMA IN THE CONDUCT OF RESEARCH ON INDUSTRIAL PROTECTION AND CONTINUITY OF ECONOMY.
  - USDRE ESTABLISH A FUNDED ACTIVITY TO
    - REVIEW TECHNICAL ASPECTS OF SERVICE/AGENCY CIVIL DEFENSE DESIGN, IMPLEMENTATION
    - CONDUCT R&D OF DOD WIDE INTEREST
    - BE THE TECHNICAL INTERFACE WITH FEAM

FIGURE 8.4: (U)

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CONCLUSION - DOD

- ENDURING CAPABILITIES REQUIRE LARGER NUMBERS OF
  - SURVIVING & FUNCTIONING MILITARY OPERATIONAL PERSONNEL
  - SUPPORTING MILITARY LOGISTICS, AND CERTAIN CIVILIAN INFRASTRUCTURE (UTILITIES, FOOD, SPECIALIZED LOGISTICS, ETC.)

NOTE: A LITTLE WILL HELP A LOT

RECOMMENDATION - DOD

- START CD PROGRAM IN DIRECT SUPPORT OF ENDURING MILITARY POSTURE
  - DOD FUNDED (I.E. NOT FEMA)
  - JCS SPONSORSHIP, INTEGRATION, PRIORITIES
  - SERVICE & DOD AGENCY DESIGN, IMPLEMENTATION AND BUDGETING
  - COMPATIBLE WITH FEMA PLANS & OBJECTIVES
  - FIRST YEAR TASKS; PUT IN FY 84-88 DEFENSE GUIDANCE (USDP) JAN '82; INITIAL PRIORITIES AND PROGRAM PACE (JCS) JAN '82; INITIAL DESIGN AND POM SUBMIT (SVCS, AGENCIES) MAY 1982; REVIEW FOR BUDGET APPROVAL (DRB) AUGUST 1982

FIGURE 8.5: (U)

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