NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

3-30-83
Date

From: Director
To: ~~Charlie~~, ~~Ken~~, Dale

Subj:

1. Phase review - I am not sure PEA is going before the EIR Board.

Julian

File
PEA
JLW

UNITED STATES MARINE CORPS
HEADQUARTERS
FLEET MARINE FORCE, ATLANTIC
NORFOLK, VIRGINIA 23515

IN REPLY REFER TO
15:GFS:jmj
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9 Mar 1983

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From: Force Engineer
To: Distribution List

Subj: Environmental Impact of Use of AABFS during CINCLANT Joint Exercise Solid Shield - '83

Encl: (1) Preliminary Environmental Assessment, Deployment of AABFS/AAFS during Solid Shield - '83 (C)

1. Enclosure (1) is provided for information/action as required.

G. F. SMITH

DISTRIBUTION:
CMC (Code LFF-2)
CG MCB CLNC
Second FSSG

88-83

1 1

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DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

TELEPHONE NO.
804-444-9611
IN REPLY REFER TO:
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11000
Ser C-3

11 FEB 1983

UNCLASSIFIED Annex B removed. CONFIDENTIAL (Unclassified upon removal of Annex B to encl (1))

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Commander, Naval Amphibious Beach Group Two

Subj: Environmental Impact of Use of AABFS during CINCLANT Joint Exercise Solid Shield - '83

Ref: (a) COMNAVBEACHGRU TWO 071917Z JAN 83
(b) DODINST 6050.1 Environmental Effects in the United States of DOD Actions
(c) OPNAVINST 6240.3E

Encl: (1) Preliminary Environmental Assessment, Deployment of AABFS/AAFS during Solid Shield - '83 (C)

1. As requested by reference (a), the necessary environmental documentation for subject exercise has been prepared in accordance with references (b) and (c), and is provided as enclosure (1).

2. Enclosure (1) was drafted utilizing the general information available at the time of preparation which provided sufficient data on which to base an informed judgment on environmental impacts. The "Proposal Evaluation and Conclusion" (Section VII, enclosure (1)) that no "environment assessment" is required and the conclusion that no significant impact will result from the proposed action is, therefore, considered appropriate and valid.

3. In the event of a change, in specific action or scenario, this Command should be notified of such change to enable enclosure (1) to be updated and for re-evaluation of the "Evaluation and Conclusion" statement.

F. E. Rohde

F. E. ROHDE
By direction.

Copy to:
CINCLANT
CINCLANTFLT

UNCLASSIFIED CONFIDENTIAL

ENCLOSURE (1)

UNCLASSIFIED
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(Unclassified upon removal of Annex B)

PRELIMINARY

ENVIRONMENTAL ASSESSMENT

SHIP TO SHORE TRANSFER AND SUBSEQUENT STORAGE AND DISTRIBUTION OF LIVE-FUEL
February 1983

Deployment of U.S. Navy Amphibious Assault Bulk Fuel System (AABFS)/U.S. Marine Corps Amphibious Assault Fuel System (AAFS) and associated live-fuel tank farm.

Prepared by Commander, Atlantic Division, Naval Facilities Engineering Command for Commander in Chief Atlantic, in accordance with Department of Defense Directive 6050.1, in compliance with Section 102(2)(c) of the National Environmental Policy Act of 1969.

I. Purpose and Need:

The primary purpose of this exercise is to provide a simulated combat environment in which to train and evaluate all participating component personnel in conducting joint operations. The exercise serves as a vehicle to exercise and evaluate existing plans and procedures and develop new procedures for the conduct of joint operations in a contingency situation, all necessary for the effective provision of National Defense.

1. Action/Project Description:

SHIP TO SHORE TRANSFER AND SUBSEQUENT STORAGE AND DISTRIBUTION OF LIVE-FUEL

a. General. The proposed training action has two major components:

(1) Bulk transfer of live-fuel from a U.S. Navy ship via AABFS to USMC AAFS/fuel farm on shore.

(2) The on-shore storage, dispensing, and transport of fuel.

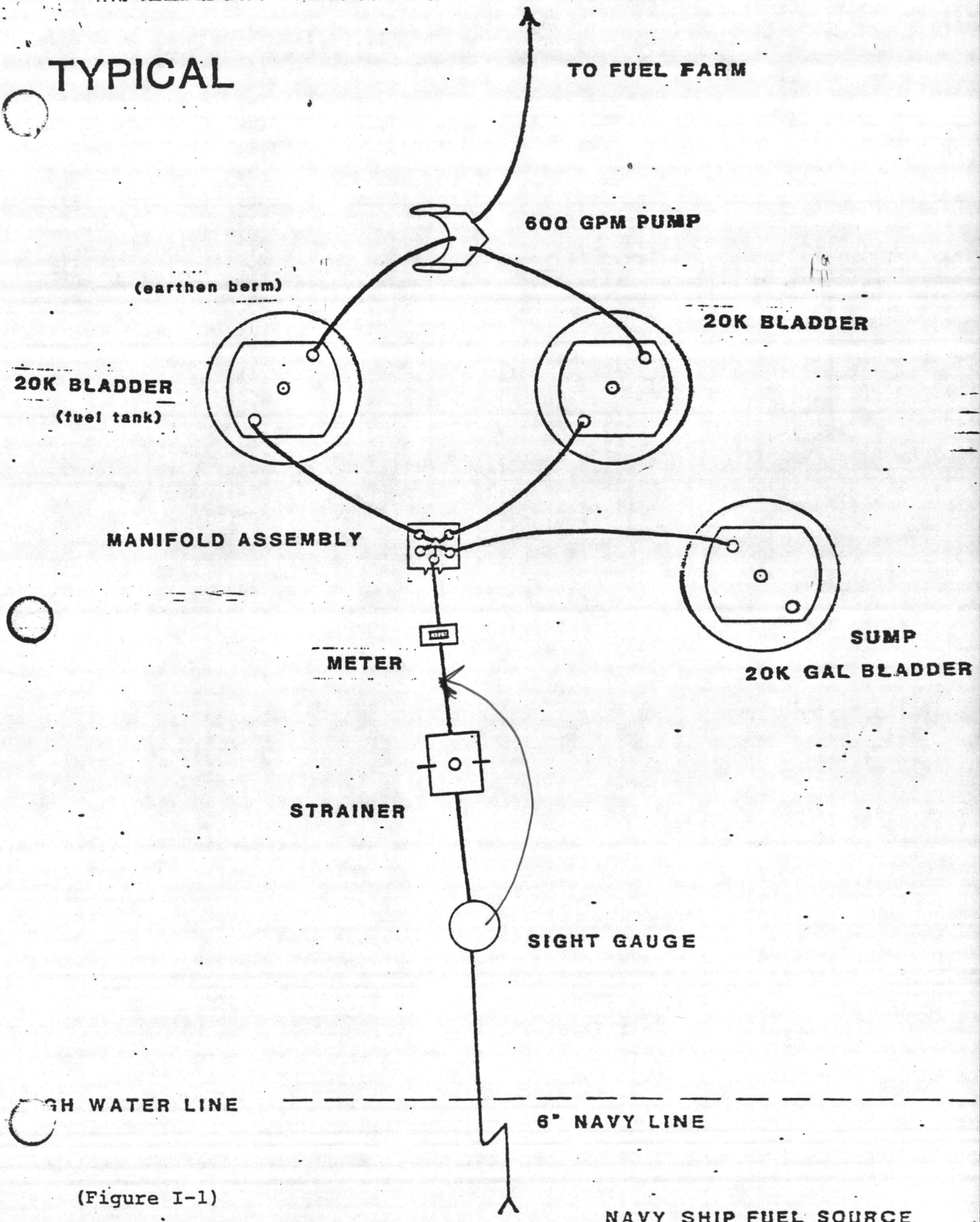
b. Project Description. USMC tank farm of an AAFS is required for support of an amphibious training exercise to be conducted in the Spring of 1983 on federal property, in part, along the North Carolina coastline.

(1) On Shore Tank Farm. (See Figure I-2 for a typical "tank farm" layout and Figure I-1 for a typical "beach unloading station" facility). The tank farm will consist of one beach unloading station and a storage/dispensing facility containing seven 20,000 gallon collapsible fuel tanks. The tank farm will administer approximately 100,000 gallons of DFM (diesel fuel).

(2) Receipt and Issue. All fuel will be received from the U.S. Navy ship based AABFS. Fuel will ultimately be issued to tactical refuelers (1,200 and 5,000 gallon capicity) for delivery to ashore components during the period of the exercise.

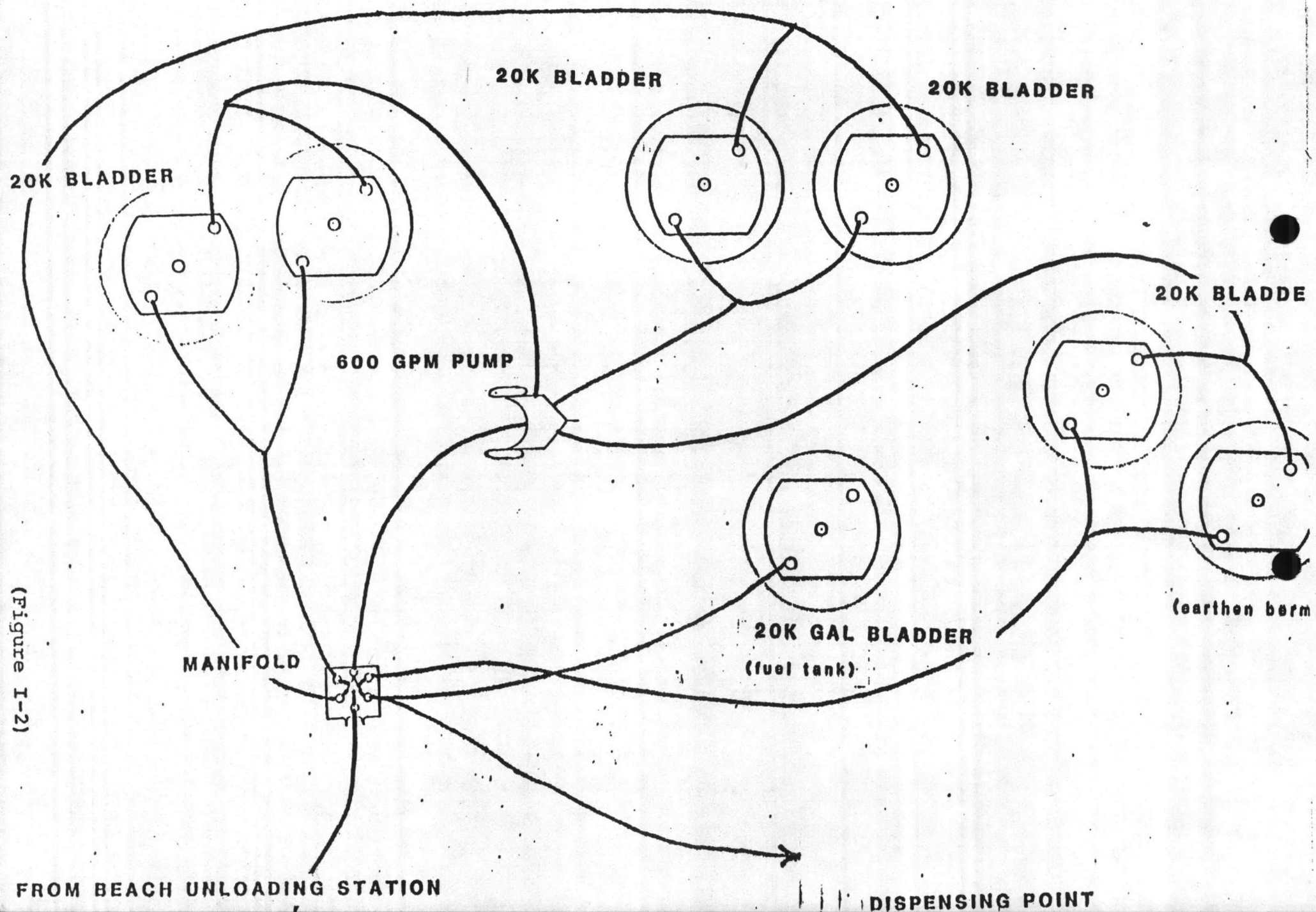
(3) AABFS. The Navy delivery system consists of a buoyant six inch hose running from bulk fuel tanks on-board an anchored ship to shore. In light of environmental concerns over a remotely possible fuel spill, the fuel transport hose will be laid along an elevated tactical causeway vice floating in sea. The causeway will extend approximately 1,000 feet from shore allowing the fuel-carrying ship to pull up to the causeway for linking up with fuel transport hose. The fuel will be pumped during daylight hours only and during a one-time pumping operation lasting approximatly three and one-half hours. AABFS will not be deployed across the Intracoastal Waterway (ICW).

AAFS BEACH UNLOADING STATION



(Figure I-1)

TYPICAL AAFS TANK FARM



(Figure I-2)

Note: Since the exercise Operation Plan (OPLAN) will resemble actual contingency plans in format and general content, the exercise dates, maneuver areas, force lists, details of the scenario, and sequence of events are classified to protect information that would reveal operational procedures of U.S. military forces.

II. Alternatives:

A. Preferred Alternative. Deploy AABFS/AAFS with live-fuel. Provides needed realistic training in the transfer of live-fuel from ship-to-shore and for inland distribution ashore, from storage farms, to the ultimate user in an amphibious environment.

B. Pump Water Vice Live-Fuel Alternative. Pumping water does not provide realistic training during the transfer and distribution process. The AABFS/AAFS was recently deployed (January 1983) at the Little Creek Naval Amphibious Base, Virginia Beach, Virginia utilizing water as an exercise transport medium. No problems with the system were encountered.

C. No Action/No Exercise Alternative. The complexities involved in scheduling, planning, and executing an operation of this nature are unparalleled and are a vital factor in developing joint service cooperation, understanding, and capability. Integrated (joint service) implementation of the military aspects of the national security program requires periodic testing and evaluation of this nature. Without such exercises, the Atlantic Command would be unable to test, develop, and evaluate its plans and its ability to act in response to the directives of the National Command Authority.

D. Alternative Sites. The choice of alternative locations for this exercise is restricted by the area under the cognizance of Commander in Chief Atlantic (CINCLANT) and the location of military installations within that area that can meet the requirements of the exercise scenario. Further constraints would include the cost factors in relocating units from their home base, vice locating them in their home area.

E. Alternative Exercise, Exercise Design. By taking into account what is delineated in the following sections, the fact that the proposed exercise is being planned for a minimum impact on the environment should be taken into consideration before altering the proposed plan. Planning and conducting an exercise without regard to environmental considerations would not be in the best national, Department of Defense, or host installation interests. Rather than conduct an unrestricted or ecologically unsound exercise, the exercise has been designed as a realistic balance of practical training objectives and environmental concern. To further alter exercise design or introduce further artificialities would not accomplish the required results.

III. Affected Environment.

A. Physical Environment. The coastal dunes extend along the entire North Carolina coast and form the seaward shore of the barrier islands which are unique to the eastern United States. The barrier islands are situated parallel to the mainland, usually less than a mile offshore, and extend for several miles with only a few breaks or peninsular connections to the mainland. The width of the dunes can vary from a few hundred feet to almost a mile. The dunes have a dynamic nature, constantly shifting and changing. The dunes are in a very delicate balance with other nearby water and land areas, all affected by the climate and the vegetation and wildlife that occupy them. Change in this balance could diminish or damage the dunes.

The inland side of the barrier islands, together with the seaward side of the mainland, is composed of saltwater marshlands/wetlands. These wetlands consist of wide shallow water courses having a sea level elevation and are overgrown with low shrubs and small trees.

B. Natural Environment.

The federal land utilized for this exercise has a wildlife management plan, developed in cooperation with state and federal wildlife agencies. The plan is updated on a regular basis. The plan directs local emphasis toward management of forests, forest game species, and endangered species.

1. Threatened or Endangered Species.

The Endangered Species Act of 1973 directed the Department of Agriculture, Interior, and Defense to protect endangered species and their habitats on lands which they administer when such actions are consistent with the mission of the area.

Section 7 of the Endangered Species Act requires federal agencies to consult with the Fish and Wildlife Service and the National Marine Fisheries Service to ensure that actions they authorize, fund, or carry out do not jeopardize the continued existence of an endangered or threatened species or result in the adverse modification or destruction of their critical habitat. For the most part, this coordination/consultation has been accomplished, and review of pertinent correspondence and comments will be incorporated into the decision making process prior to the determination to hold the exercise as it is conceptualized.

Threatened and endangered species known to inhabitat the federal reservations, within the southeast, and most likely to be affected by the exercise are:

a. Red-Cockaded Woodpecker.

The Red Cockaded Woodpecker, a resident in mature and old growth pine woodlands from southeast Oklahoma, Arkansas, western Kentucky, and southeast Virginia south to the Gulf Coast and southern Florida, is uncommon and very local through most of its current range. The Red Cockaded Woodpecker prefers open pinewoods and its requirement for mature pines for cavity construction is well documented. The development of a dense hardwood understory causes the bird to abandon the territory, especially when this development prevents access to its cavity. Home range may vary from 25 to 150 acres, depending on timber type, stand density, and the number of birds.

On the affected military reservations, cavity trees, and a varying amount of adjacent land are protected from logging. Each installation is continuing coordination with the Fish and Wildlife Service in compliance with the regulations for Interagency Cooperation - Endangered Species Act of 1973, as published in the January 4, 1978 Federal Register.

The wildlife management programs of those installations, which may be utilized for the exercise, now provide protection for the woodpecker habitat, ranging from inventorying and marking of cavity trees and prescribed burning to marking of 100 acre tracts of mature pine habitat surrounding the trees and ensuring these areas are off limits to training activities involving tracked vehicles. Wheeled vehicles are restricted to existing roadways within these haitat areas, and ground forces are generally excluded from the habitat areas by marking them off limits, or minefield, etc. Exercise participants will conform to the host installation procedures for protection of this species.

b. American Alligator.

The American alligator ranges from the southern portions of Albermarle Sound, North Carolina, south on the coastal plain throughout Florida, west to east Texas, and north to south Arkansas. The alligator occurs in coastal rivers, lakes, marshes, and estuaries. Because of its large size and aquatic habitat, exercise participants are unlikely to have a direct impact on the alligator.

c. Sea Turtles.

The Atlantic Loggerhead Turtle which ranges from Nova Scotia to Argentina, and the Green Turtle whose range is essentially tropical waters from Massachusetts to Argentina are known to frequent the offshore waters of the southeeastern United States and Caribbean, as are the Atlantic Leatherback, Hawksbill, and Ridley turtles.

Both the Loggerhead and the Green turtles are known to use the beaches of some military reservations for nesting during the May through August period. Management practices consist of Natural Resources Department personnel placing wire cages over all active nests to protect them from predators, such as foxes or raccoons, and diverting troop activities to prevent accidental disruption by troops.

In summary, federal and state inventory lists of rare and endangered plant and animal species are available at each reservation. The Natural Resources and/or Environmental Affairs Departments of the installations have initiated endangered species programs and have completed or are involved in negotiations under the January, 1978 Interagency Cooperation Regulations. The inventories, established programs, and staffs appear to be sufficient to ensure a successful long-range program consistent with the military installation missions and exercise activities for the protection of threatened and endangered species.

C. Socio-Cultural. To provide the possible cultural resources of the exercise area, the legal protection of Section 106 of the National Historic Preservation Act and Executive Order 11593, the National Register of Historic Places was consulted. The National Register identifies no historic resources that will be affected by the proposed exercise.

IV. Environmental Consequences.

A. Physical Environment.

1. Air Quality. No significant long-range adverse impact on air quality will result from this exercise.

2. Soils. Any soils contaminated by POL will be disposed of in an approved sanitary landfill.

3. Groundwater. The water table could be subject to contamination should a major fuel spill not be contained. However, if the mitigative measures, outlined in Section V are closely adhered to, no impact should result.

4. Terrain. Upon completion of the proposed exercise, the project site will be returned to its original configuration, therefore, no impact on the local environs.

B. Natural Environment.

The impacts of the flora and fauna of the areas of concentrated activity are not considered to be either of significant magnitude, or duration to upset or significantly alter the ecological balance in the training areas.

1. Threatened or Endangered Species.

The accident destruction or disturbance of the habitat of the endangered species remains a reality. However, the likelihood of appreciable destruction or alteration of endangered species habitat occuring, in light of the precautions taken by the host installation wildlife management personnel, is considered remote. Further, should an incident occur, it is considered that damage to habitat would be minimal and would not threaten the continued existence or propagation of the species.

C. Socio-Cultural.

1. Economy.

Land use of the exercise area will not be altered, maneuvering of troops in training areas is a common occurence. The economic impact of the exercise on the local area is not readily quantifiable. However, it is considered to be slight, in that personnel involved in the exercise are wholly transported and supported by their military commands.

2. Cultural Resources.

There is an extremely remote possibility that the exercise may damage unknown archaeological sites. This is considered highly

unlikely because the exercise will not be occuring in any areas that have not been extensively used by troops for training evolutions on a regular basis.

If any site of potential importance is encountered during the exercise, the host installation authorities will be notified.

D. Infrastructure.

1. Sanitary Waste.

Chemical toilets will be utilized for human waste collection. Residues will be collected and disposal procedures coordinated with cognizant local public health officials, or installation commands as appropriate.

2. Solid Waste.

All solid wastes will be disposed of in sanitary landfill, in an approved manner, as directed by host installation procedures. Sanitary landfill is the only approved means of solid waste disposal for exercise troops.

E. Energy Requirements.

The energy resources required by the exercise, as well as the attendant resources required for planning and executing the exercise, will be consumed should the exercise take place as planned. Fuel expended for the exericse proposed occurs within the framework of overall component service and DOD energy allocations and programs and is not in excess of these allowances. Conservation of natural and depletable resources is an integral part of the planning process.

3. POL Spills.

In spite of all the precautions taken, the potential for spillage from an accident exists.

Navy policy is to remove spilled oil physically from waters, and it restricts the use of chemical emulsifiers, dispersants, and sinking agents to only incidents where such materials will reduce hazard to human life or fire hazard to property.

In the event of a fuel spill/leak in the AABFS, pumping operation would be stopped. Immediate action would be taken to deploy a boom to contain the fugitive fuel so that fuel removal/recovery may be carried out.

Strict compliance with the procedures for spill reporting, containment and clean-up as delineated by MCB, Camp Lejeune Order 11090.1B (provided in Annex A) will be enforced.

a. Fuel Type.

Diesel (synonym: DZM) characteristics of diesel fuel, from the "Naval Oil and Hazardous Material Technical Assistance Data System" (OHMTADS), provided in Table IV-1.

TABLE IV-1

MAT) Material Name: DIESEL FUEL NO. 2-D
SPC) Species in Mixture: MIXTURE OF HYDROCARBONS
SG) Synersistic Materials: CAN BE SYNERGISTIC TO PESTICIDES
FLM) Flammability: COMBUSTION WITH MODERATE HEATING
TCP) Toxic Combustion Prod.: NO GREAT HAZARD
FLP) Flash Point (C.): 52
EXP) Explosiveness: STABLE
SLC) Solubility Characteristics: INSOLUBLE
SPG) Specific Gravity: .856
PFA) Potential for Accumulation: NEGATIVE
STB) Salt Water Toxicity Text:

Conc.	Expos (Hr)	Specie	Effect	Test Environment	Reference
91.01	24	JUVENILE AMERICAN SHAD	TLM		S25
167.01	48	JUVENILE AMERICAN SHAD	TLM		S25
251.01 -334.01	48	JUVENILE AMERICAN SHAD	20% SURVIVAL		S25
84.01	24	JUVENILE AMERICAN SHAD	NO KILL		S25

LVN) Livestock Toxicity (ppm): 30
LVR) Livestock Toxicity (Reference): CATTLE (D1)
AQN) Aquatic Plants (ppm): 75
AQR) Aquatic Plants (Reference): GIANT KELP (D1)
TR) Major Species Threatened: WATERFOWL AND AQUATIC LIFE
DRC) Direct Contact: IRRITATING IN SALT WATER
HOT) Odor Threshold, Medium (ppm): .08
HOR) Odor Threshold, Medium (Reference): D1
SAF) Personal Safety Precautions: AVOID IGNITION SOURCES
AHL) Acute Hazard Level: COATING ACTION OF OILS CAN DESTROY WATER BIRDS, PLANKTON, ALGAE AND FISHES
HEL) Degree of Hazard to Public Health: WILL CAUSE TASTE AND ODOR PROBLEMS FAR BELOW TOXIC LEVELS
ACT) Action Levels: CALL LOCAL FIRE AUTHORITY. REMOVE ALL POTENTIAL IGNITION SOURCES.
AML) In Situ Amelioration: THERE ARE A WIDE VARIETY OF SORBENTS, SINKING AGENTS, GELLING AGENTS, COMBUSTION PROMOTERS, DISPERSANTS, AND MECHANICAL SYSTEMS TO TREAT OIL SPILLS. IN ADDITION, STRAW, POLYURETHANE FOAM, ACTIVATED CARBON, AND PEAT CAN BE USED TO SOAK UP OIL. SEEK PROFESSIONAL ENVIRONMENTAL ENGINEERING ASSISTANCE THROUGH EPA'S ENVIRONMENTAL RESPONSE TEAM (ERT), EDISON, NJ, 24-HOUR NO. 201-321-6660.
SHR) Beach/Shore Restoration: OIL CAN BE BURNED OFF OF BEACHES. MAY REQUIRE ADDITIONAL FUEL FOR COMPLETE COMBUSTION.
AVL) Aval. of Countermeasure Material: OIL TREATING AGENTS ARE STOCKED IN MANY MAJOR HARBOR. IN ADDITION, STRAW - FARMSTEAD STABLES; POLYURETHANE FOAM - UPHOLSTERY SHOPS; ACTIVATED CARBON - WATER TREATMENT PLANTS, SUGAR REFINERIES; AND PEAT - NURSERIES, FLORAL SHOPS.
DIS) Disposal Method: INCINERATE.
IFP) Industrial Fouling Pot.: BOILER WATER FEED SHOULD BE LIMITED TO

7 PPM OR LESS. OIL CAN RESULT IN POOR HEAT TRANSPORT, BLISTERING, OVERHEATING AND FOAMING. IN REUSED COOLING WATER, NO OIL IS ACCEPTABLE. OIL CAUSES TASTES IN FOOD PROCESSING WATER AND IS ESPECIALLY DETRIMENTAL TO CEMENT AND PAPER MAKING OPERATIONS.

WTP) Effects on Water Treatment Process: WILL INTERFERE WITH SETTLING AND FLOC FORMATION. MAY PLUG FILTERS AND EXCHANGE BEDS.

WA) Major Water Use Threatened: RECREATION, FISHERIES, POTABLE SUPPLY, IRRIGATION, INDUSTRIAL

LOC) Probable Location and State of Material: WILL FLOAT IN SLICK ON SURFACE. DISSOLVED LEVELS PROGRESS FROM 80 PPM TO OVER 360 PPM OVER 40 DAY PERIOD (R59).

DAT) Adequacy of Data: FAIR

ption?

V. Compliance with Federal, State, and Local Environmental Regulations, and Guidelines

a. Endangered Species Act (see III-B, IV-B).

b. Clean Water Act (see IV-A).

c. Clean Air Act (see IV-A).

d. Coastal Zone Management (CZM) Act.

In accordance with Federal Consistency Requirements of Section 307 of the Coastal Zone Management Act of 1972, as amended, this project has been reviewed for consistency with the North Carolina Coastal Management Program. Based upon this review it has been determined that this proposed military exercise is consistant with that program. This determination of consistancy is supported by the information contained in this document.

e. National Historic Preservation Act (see III-C, IV-C).

f. North Carolina Erosion and Sedimentation Regulations.

There is no significant potential for sediment leaving the proposed exercise site. The fragile dunes will be avoided, exercise participants will only cross the dune line at existing breaks.

g. Executive Order 11990, Protection of Wetlands.

Spill prevention and containment procedures outlined in Section VI would serve to prevent any fugitive fuel from impacting any wetland areas. Troops will not exercise, nor will fill materials be placed in any wetlands.

VI. Mitigative Measures/Spill Control and Containment Plan

A. Environmental Considerations and Mitigative Measures for AABFS.

1. Prior to pumping operations the AABFS is subject to two separate air pressure tests to ensure system integrity (a pre-sail check and again immediately prior to pumping fuel).

2. Fuel will be pumped during hours of daylight and under conditions conducive to clean-up operations should a spill occur.

3. All fuel will be pumped ashore during a one-time pumping operation (delivery time = 3-1/2 hours approximately).

4. AABFS fuel transport line will be laid along a causeway vice floating in the sea. The hose will be sand-bagged along the causeway to contain any spills.

5. Positive communications will be maintained. Any communication interruption will be considered a fuel spillage and pumping will be stopped.

6. The portion of the transfer that will transverse the beach line will have berms along each side of the line and at the gate where connection is made with the seaward line.

7. The AABFS will be under constant observation during transfer operations.

8. The amount of fuel contained in the transfer line at a given time is roughtly 1,500 gallons.

a. 6" line X 1,000 feet (ship-to-shore)
b. 196.35 cubic feet line capacity
c. 196.35 ft^3 X 7.48 gallons/ft^3 = 1,469 gallons (approximately)

Therefore, "worst case" spill-over water would be less than 1,500 gallons, a relatively small amount.

B. Envrionmental Considerations and Mitigative Measures for AAFS/Tank Farm (Ashore) Components.

1. Each of the 20,000 gallon collapsible fuel bladders will be individually bermed with earth. The berm will be capable of holding a minimum of 1-1/2 times the amount of fuel stored in the individual fuel bladder. A non-permeable liner will be placed under each fuel tank and under each major component of the system. The fuel dispensing point will be protected by installation of drip catch cans under each fuel dispensing nozzle and by installation of protective beach matting. Fuel lines crossing an exercise road, under controlled traffic, will be protected by nestable culvert.

2. Site Location Requirements.

All areas within the proposed tank farm site are free of vegetation and debris. Level terrain will be utilized for the tank farm. Surrounding terrain is high level ground which would assist in containment should a spill occur. Initial site preparation will provide a stockpile of soil for additional spill containment berms. Berm soil will come from stockpiled dredge spoils located near the proposed site. A small dozer/scooper loader will be on the site at all times as a contingency for preparation of berms and immediate removal of contaminated soil.

3. Personnel. Trained personnel and hand tools will be stationed at the fuel farm throughout the operations along with sentry personnel to prevent vehicles from crossing fuel lines.

4. Transfer. No fuel will be pumped across the ICW. All fuel transfer across the ICW will be accomplished by trucking.

VII. Conclusion.

The proposed exercise as described and assessed in this document, and the classified annex is not expected to result in significant environmentally based controversy. The potential for accidental damage is realized and steps have been taken to minimize both accidents and the probability of significant environmental damage occuring as a result of them.

Based on this evaluation and the assumption that the continuing assessment of the proposed action will fail to bring to light any probable significant impact on the quality of the human environment, or substantial environmentally-based controversy, it is determined that no environmental statement is required and a Finding of No Significant Impact is appropriate.

However, the indicated actions to be taken to minimize the environmental impact of the exercise and the actions cited to mitigate any impacts that do occur are to continue to be pursued, through the exercise period, until damage repairs are completed.

ANNEX A

1. Marine Corps Base, Camp Lejeune, North Carolina
   Base Order 11090.1B

   "Oil Pollution Prevention and Abatement and Oil and Other Hazardouls Substances Spill Contingency Plan"

2. Marine Corps Base, Camp Lejeune, North Carolina
   Base Order 11000.1A

   "Environmental Considerations in Marine Corps Actions"

   Note: The aforementioned Base Orders are readily correlated to the proposed exercise and all regulations are germane.

ASSISTANT CHIEF OF STAFF, FACILITIES
HEADQUARTERS, MARINE CORPS BASE

DATE 13 April 83

TO: N.R.E.A.D.

BASE MAINT O	DIR, FAMILY HOUSING
PUBLIC WORKS O	DIR, UNACCOMPANIED PERS HSG
COMM-ELECT O	BASE FIRE CHIEF

ATTN: Julian

1. Attached is forwarded for info/action.

PEA for 55-83 is attached;
we rec'd Friday @ 3:00 p.m.

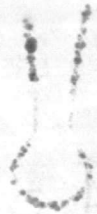
~~2. Please initial, or comment, and return all papers to this office.~~

My Review notes are @ back.

3. Your file copy

If you find add'l things of significance, let me know.

"LET'S THINK OF A FEW REASONS
WHY IT CAN BE DONE"



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DEPARTMENT OF DEFENSE
THE ATLANTIC COMMAND
HEADQUARTERS OF THE COMMANDER IN CHIEF
NORFOLK, VIRGINIA 23511

6280/FF16-6/N923
Ser 405
07 APR 1983

CONFIDENTIAL - Unclassified upon removal of enclosures (1) and (2)

From: Commander in Chief, Atlantic
To: Distribution List

Subj: Preliminary Environmental Assessment for CINCLANT Joint Exercise SOLID SHIELD 83

Ref: (a) DoD Directive 6050.1 of 30 Jul 79, Environmental Effects in the United States of DoD Actions
(b) CINCLANTINST 6240.4
(c) CINCLANT NORFOLK VA 022039Z MAR 83 (NOTAL)
(d) CINCLANT ltr 3100/FF16-6/J053C:sk Ser 0864 of 4 Oct 82
(e) CINCLANT ltr 3100/FF16-6/JO53 Ser 1110 of 23 Dec 1982

Encl: (1) Preliminary Environmental Assessment for Joint Exercise SOLID SHIELD 83 (C)
(2) Preliminary Environmental Assessment for Ship to Shore Transfer and Subsequent Storage of Live-Fuel (C)

1. In accordance with references (a) and (b), a Preliminary Environmental Assessment for Joint Exercise SOLID SHIELD 83 has been prepared and is provided as enclosure (1).

2. A preliminary environmental assessment for use of Amphibious Assult Bulk Fuel System (AABFS) has been prepared and is provided as enclosure (2). Reference (c) provided guidance to FMFLANT and COMPHIBGRU TWO regarding mitigating measures to be followed in deployment and use of AABFS.

3. Enclosure (1) was developed from information available at the early planning stages of the exercise. Sufficient data was available on which to base a conclusion concerning the environmental impact of the exercise. The "Proposal Evaluation and Conclusion" [enclosure (1) section V] states no environmental statement is required and no significant impact will result from the proposed action. CINCLANT should be advised if additional exercise proposals not specified in references (d) and (e) are developed. CINCLANT concurs in the findings of enclosure (1).

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COPY 1 OF 1

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4. Most of the land portion of the exercise will be conducted on military installations in CONUS. These host activities have ongoing environmental programs with appropriate "base orders" and Standard Operating Procedures for field activities to insure preservation of natural resources and future use of the maneuver area. SOLID SHIELD 83 shall be conducted in a manner that is consistant with host activity environmental programs. Coordination with appropriate host activity is essential. Addressees shall ensure that subordinate exercise participants adhere to applicable service, command and host installation directives regarding protection of the natural environment during the conduct of Joint Exercise SOLID SHIELD 83.

L. A. MAUNEY
By direction

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CG FT STEWART, GA
CG MCB CAMP LEJEUNE, NC
DJCG SOLID SHIELD 83
NAVPHIBASE Little Creek

I. PURPOSE AND NEED

The proposed administrative action, Joint Exercise SOLID SHIELD 83 (SS-83), is a Commander in Chief, Atlantic (CINCLANT) sponsored, Joint Training Exercise scheduled to be conducted during the spring of 1983 on military reservations in the southeastern United States, and other geographic areas of subordinate Commands that are under the operational control of CINCLANT. The action is designed to exercise selected organizations of component services in the procedures and tactics to be used in a mid to high intensity conflict.

Approximately 9,800 Army, 16,000 Navy, 5,000 Air Force, and 16,000 Marines may participate to some degree in the exercise. The exercise entails deployment, employment and redeployment of a Joint Task Force whose mission is to conduct operations similar to those anticipated in various contingency plans. Also included is the exercise of those support components at home bases that would be required to function if an expeditionary force were launched from the United States. While the number of forces actually participating in the field environment or away from home base is CLASSIFIED, it will be greatly reduced from the above figures.

SOLID SHIELD 83 is the fifteenth in a continuing series of annual Atlantic Command-sponsored training exercises, conducted by the Joint Chief of Staff. Previous exercises in this series, which were entitled Joint Exercise EXOTIC DANCER I through VI and SOLID SHIELD 74 through 81, have been conducted in the southeastern Carolinas, Georgia and/or Puerto Rico. Environmental Impact Statements were prepared and filed for EXOTIC DANCER V and VI which were conducted in North Carolina. Environmental Assessments have been prepared for the SOLID SHIELD Exercise Series, 74 through 79 and Preliminary Environmental Assessment were prepared for SOLID SHIELDs 80 and 81.

The primary purpose of SS-83 is to provide a simulated combat environment in which to train and evaluate all participating headquarters staff and component personnel in conducting joint operations involving air, land, fleet and unconventional warfare (UW). The exercise serves as a vehicle to exercise and evaluate existing plans and procedures and develop new procedures for the conduct of joint operations in a contingency situation.

The SOLID SHIELD 83 concept is designed to exercise selected organizations of both actual and constructive forces in the procedures and tactics likely to be used in response to a contingency situation, where these organizations would be required to function as part of a joint force. An exercise directorate (Joint Control Group) will be established to direct, control and evaluate the exercise. Conventional forces, both friendly and aggressor, and friendly unconventional forces will participate. An air campaign, parachute and/or helicopter assault, amphibious troop and/or supply landing, air/land reinforcement and related activity may take place or be simulated.

II. ALTERNATIVES INCLUDING THE PROPOSED EXERCISE

The decision to conduct an exercise rests on criteria/objectives which will determine the validity of the exercise. The primary decision criteria affecting the SOLID SHIELD exercise is the need to maximize the achievement of the military training objectives while minimizing the environmental and economic costs, i.e., maximum training with minimum resource expenditures. Some considerations that enter into the decision to select a site for the exercise are:

Area accessibility by land, air and water.

Availability of physical resources to conduct the exercise.

Ecological considerations.

Economic factors, including budgetary constraints.

Force composition.

Geophysical factors, including meteorological, oceanographic and physiographic conditions.

Health and safety of personnel and equipment risks.

Integration of the exercise into the overall Department of Defense and component services, mission, training programs, and objectives.

Military readiness posture of CINCLANT forces.

Population/services capabilities.

Potential effects on non-military operations in the exercise area.

World political situation, including potential threats to the balance of power.

Once a preliminary evaluation is conducted based on the above factors, plus many other related factors, various associated decisions based on a comparative evaluation that involve both qualitative and quantitative preliminary information must be made. The locale and time frame alternatives for the exercise then becomes fairly well determined. Meanwhile, the relative availability of specific forces must be assessed to assure that the proposed exercise can be integrated into the annual exercise schedules of the various commands concerned. Exercise SOLID

SHIELD 83 is being planned following the general outline above. A qualitative discussion of alternatives, as affected by the preceding constraints follows:

A. Preferred Alternative

Elements of the Air Force, Army, Coast Guard, Marine Corps and Navy are programmed for participation in the training evolution. All phases of a contingency, including, but not limited to, such activities as those listed in Figure I-1, will be accomplished by command posts and manuevering elements, or be simulated by the exercise control group. The Joint Control Group will be used to represent, when required, non-participating agencies and forces necessary for the realistic progression of exercise events, as well as enforce the rules of exercise play and safety.

Navy ship activities in national and international waters off the coast of Virginia, the Carolinas, and Georgia are anticipated. Navy ship activities may occur at other areas under the operational control of CINCLANT or his subordinate commanders. No unusual naval training activities are planned; and, thus, no unusual restrictions on the use of these waters as a result of the exercise are anticipated. The provisions of the U. S. Coast Guard Navigation Rules (COMDTINST M16672.2) and 33 CFR Navigation and Navigable Waters are applicable.

Figure I-1, Training Objectives

Conduct of a campaign involving air, land, fleet, and unconventional forces

Airspace management

Personnel augmentation

Public Affairs

Coordination procedures for joint forces

Joint Unconventional Warfare Tactics (UW)

Nuclear, Biological and Chemical Defense

Logistics support

Combat medicine

Intelligence

Psychological Operations (PSYOPS)

Laws of War

Air Control and Defense

Operations Security (OPSEC)

Communications Capabilities and Security

Signal Intelligence (SIGINT)

Electronic Warfare (EW)

Weather Support

Search and Rescue

Civil Affairs

Military aircraft (Air Force, Marine and Navy) will conduct exercise-related activities which will occur over government reservations and within temporarily restricted airspace approved by the Federal Aviation Administration. These activities will consist of providing simulated Close Air Support (CAS) to field elements, air defense, interdiction, reconnaissance and aerial resupply, as well as a counter air campaign and both airborne and airmobile/helicopter borne operations. All low altitude sorties will be flown on approved low level routes and/or within the appropriate installation/range complex. Appendix A is a copy of the request for restricted airspace.

Army and Marine activities will consist of the manning and operation of the command posts necessary to meet the tasking as presented in subsequent paragraphs. Airlifted and sealifted forces also will conduct coordinated amphibious and airborne assaults, follow-on maneuvers and dispersals. Ground forces will manuever as necessary to provide the degree of realism required for specific support operations.

Major participating forces and agencies include:

1. U. S. Army. Forces under the Commander in Chief, U. S. Army Forces Atlantic (CINCARLANT).

2. U. S. Navy and Marine Corps. Forces under the Commander in Chief U. S. Atlantic Fleet (CINCLANTFLT).

3. U. S. Air Force. Forces under the Commander in Chief, U. S. Air Force Forces Atlantic (CINCAFLANT).

4. Military Airlift Command. Airlift and air reserve forces from the component services.

5. Federal Aviation Administration (FAA). Participation in a coordination role for airspace management purposes.

The exercise area is defined as the overall area wherein exercise activity is expected to take place with sufficient concentrated activity as to be noticeably exercise-related. Virtually all activity directly resulting from the exercise, other than small scale unconventional warfare (UW) operations and those taking place at staging bases, will be conducted in the exercise area. The offshore waters of southeastern United States are considered part of the exercise area.

Exercise related activity also will take place at military reservations in the eastern portions of Virginia, the Carolinas, Georgia and Florida, and possibly on National and/or state forest areas.

The exercise areas are subject to further revision as exercise planning progresses.

The SOLID SHIELD 83 scenario is planned to exercise the forces of the Atlantic Command in a mid-to-high-intensity conflict, with emphasis on field operations involving reenforcement, non-combatant evacuation, and offensive operation in a crisis area. SS-83 places emphasis on providing Commanders maximum latitude in employment of ground forces in a short-term, high mobility joint operation in a field environment, as opposed to emphasis on a tactical headquarters exercise. Tactical headquarters for participating commands will be located in realistic field sites. In addition to command posts, actual operating forces will be deployed to conduct specific operations in support of joint or service objectives. While some troop operations will be simulated in the scenario, the following is tentatively scheduled to be conducted by actual operating forces:

> An air/land and amphibious operation employing helicopters and supporting fixed wing aircraft, air mobile/ helicopterborne assaults and supporting air operations from land based aircraft, an air superiority campaign, a counter air campaign and a mine countermeasure operation.

Since the exercise Operation Plan (OPLAN) will resemble actual contingency plans in format and general content, the exercise dates, maneuver areas, force lists, details of the scenario and

sequence of events are classified "Confidential" to protect information that would reveal operational procedures of U. S. Military forces.

B. The No Action/No Exercise Alternative

The SOLID SHIELD series, or an exercise series of similar scope and complexity, presents the only opportunity the Atlantic Command has for testing, developing, and evaluating its capabilities to act within the joint service framework. Additionally, SOLID SHIELD also provides flexibility for testing unique factors which would pertain to contingency operations. The complexities involved in scheduling, planning, and executing an operation of this nature are unparalleled and are a vital factor in developing joint service cooperation, understanding and capability. Integrated (joint service) implementation of the military aspects of the national security program requires periodic testing and evaluation of this nature. Without such exercises, the Atlantic Command would be unable to develop, test, and evaluate its plans and its ability to act in response to the directives of the National Command Authority.

C. Conducting Several Smaller Scale Exercises

Planning several smaller scale exercises at dissimilar times or at the same time, vice a joint exercise, is basically what the component services accomplish within their own exercise programs.

The ability to conduct a joint operation in a contingency or similar situation is paramount to the CINCLANT role. Several smaller scale exercises would not test/exercise the component service capabilities to function as a joint force. Several smaller scale exercises would have little, if any, additional value over no exercise at all, for they would rely heavily upon unrealistic features and overly artificial constructive vice actual operations. This would effectively deny assigned troops the opportunities associated with the training and experience to be gained in a joint service project and could produce as much, if not more, of a threat to the environment than the planned action. Such a series would also deny participants, particularly planning staffs, the opportunity to test, evaluate, and develop joint service concepts and doctrine in the light of modern technological development. It is the judgment of the Atlantic Command that a joint service exercise, such as SOLID SHIELD with its attendant scope, objectives, and opportunities, is the best solution to the problem of developing professional expertise commensurate with minimum threat to the environment.

D. Alternative Sites

The choice of alternative locations for the exercise is restricted by the area under the cognizance of CINCLANT and the location of military installations within that area than can meet the requirements of the required scenario. Further constraints would include the potential environmental impact on an installation from overutilization, i.e., the carrying capacity of the installation for Field Training Exercises, cost factors in relocating units from their home base, vice locating them in the field at their home or nearby installation, interference with installation high priority missions and numerous other considerations. A further discussion of alternative sites is presented in the classified annex.

E. Alternative Force Lists

Units are selected to participate in joint exercises by the component service based on the mission of the service in the scenario being played, the ability of the unit to accomplish the mission within the exercise objectives, unit requirements for training in that particular mission and their availability. The method of selecting forces when these constraints are considered leaves little opportunity for adjustments in force lists with the exception of the utilization of the smaller component as opposed to the full complement, e.g., the battalion (-) in lieu of the full battalion. Where objectives of SS-83 could be achieved by the use of (-) forces, this is being planned.

F. Alternative Exercise Design

The fact that the proposed exercise is being planned for a minimum impact on the environment should be taken into consideration, before altering the proposed plan. Planning and conducting an exercise without regard to environmental considerations would not be in the best national, Department of Defense, CINCLANT, or host installation interests. Rather than conduct an unrestricted or ecologically unsound exercise, the exercise has been designed as a realistic balance of practical training objectives and environmental concern. The decisions made and directives issued covering the environmental quality aspects of the exercise admittedly introduce or amplify certain military artificialities. However, it is believed these decisions and directives represent an effective combination of military training objectives and procedures coupled with genuine concern for the quality of the human environment, its enhancement and protection. To further alter exercise design or introduce further artificialities would not accomplish the required result.

G. Comparative Discussion of Impacts

A discussion of the projected impacts on the preferred exercise location and alternative locations is presented in the Classified Annex. The following impacts will occur to a similar degree for each of the alternatives which would place troops in the field vice a command post exercise.

1. Physical Environment

Some topographic alterations will occur due to the disturbance of surface soils. Off-road tracked and wheeled vehicle operations will disturb surface soil layers and expose less fertile subsoil, causing the potential for increased soil erosion by wind and rainfall. Steep sloped areas, if traversed, will be less capable of revegetation by natural processses and could require human effort to halt the erosion process. Repeated compaction of soils by vehicles will limit production of vegetation. Limited beach disturbance in the vicinity of amphibious operations will occur.

Localized degradation to surface waters will occur from the natural purification process of soakage pit and straddle trench leachate. Stream crossings by vehicles will result in some increase in suspended solids and possibly some contamination by oils and grease from vehicles. Stream standards from these activities or from a POL spill could be violated and require implementation of the host installation Spill Containment and Control Contingency Plan. Because of erosion, suspended solid levels may remain higher than normal for a more extended period. In any case, decreases in water quality are projected as being minor and of short duration. Air quality in localized areas of concentrated activity will be decreased from weapons firing, vehicles (dust and emissions), the internal combustion engines of portable power sources, and possible smoke generating activities. This degradation will be localized and temporary in nature and have no measurable consequential effect on regional air quality.

2. Natural Environment

In vehicle manuever areas, uprooting and destruction of ground cover by crushing and soil compaction will occur as will destruction of grasses and similar type ground cover in areas of heavy foot traffic, e.g., Field Headquarters areas. Some more mature trees and shrubs will also be damaged by the tracked vehicles. Some damage to wildlife food resources will thus occur. Small amounts of endangered species habitat may be destroyed in spite of precautions to protect it from disruption.

3. Infrastructure

Low volumes of solid waste will be generated by field troops daily during the exercises. These low volumes are based on the fact that to realize the most training during the limited period the field elements remain mobile and subsist on "C" rations. The disposal of the solid waste will result in minor increased loads at host installation landfills from troops not normally assigned to that installation.

Potable water requirements are estimated at five gallons per man per day. This volume also is a result of high mobility of the field maneuver elements. The largest volume of water could be required by a wash down prior to the backload of equipment, if such a backload occurs. The wash water for the last phase of amphibious backload normally is obtained from the service craft who obtain it from the amphibious ships. A preliminary washdown of equipment could use up to 300 gallons of water/vehicle which would be obtained from the host facility. This amount is not considered excessive.

In summation, some cumulative short-term direct effects (five years or less), although considered slight, will nevertheless occur, as will some long-term effects. Consideration of these cumulative effects, including those identified in the classified annex, as well as consideration of the resultant impact of previous similar exercises does not reveal the potential for significant effects on long-term productivity. The disruption of surface soils, resultant erosion and eventual stabilization of disturbed soils either naturally or by artificial means may produce an altered vegetation pattern in the affected area, i.e., natural succession from field to thicket, etc., will be altered. This, however, is the usual situation in any man-dominated environment.

In addition to consideration of the effects the preferred alternative has on the environment, the effects it has on CINCLANT's capabilities to perform its missions are also worthy of consideration. In the short term, the conduct of Joint Exercise SOLID SHIELD 83, as proposed, will allow CINCLANT to test and evaluate the capability to respond to the directives of the National Command Authority. This, in itself, is a vital factor in the decision to conduct the exercise.

As previously noted, SS-83 is a complex Joint Training Exercise for components of the Atlantic Command. It is the only CINCLANT-sponsored exercise series that tests the validity of realistic scenarios closely related to potential conflicts or actual contingency plans, as well as the ability of the armed forces to interact as a cohesive unit and accomplish the same

goal with a minimum of duplication of effort or delay. Each Solid Shield exercise provides readiness training through the spectrum of joint forces, ranging from component commanders, through the headquarters staffs, to the individual soldier, sailor, or airman. This exercise is planned on a rotating schedule, based on a comprehensive assessment of need to emphasize specific areas of operations under the missions of the Atlantic Command. It is imperative to our defense posture that these forces are permitted to train in as realistic a scenario as is feasible. Should even a partial mobilization be required, the capability to respond must be known, as well as any potential problem areas. Since the only proven method of testing any plan is implementation, the SOLID SHIELD Exercises are considered vital to the defense posture of the Atlantic Command.

Host installation commanders have the authority to detain troops until such time as restoration to any damaged areas, within the capability of the force, has been completed.

H. Mitigation Measures

Exercise planners and the participants are acutely aware of the potential for severe adverse environmental effects of an exercise that is designed to achieve these goals. The potential adverse impacts and the means to mitigate them from the operation of supersonic aircraft, tracked and wheeled vehicles, artillery, and concentrations of personnel in a field exercise on the environment has required, and will continue to receive, full consideration in exercise planning. The adverse environmental effects noted in previous paragraphs are primarily associated with the normal operations of an exercise force. These adverse effects can generally be grouped under the heading of localized and short-term alterations in the production rates of undesirable pollutants within the exercise area and a possible increased probability of accidental (hence, unplanned) damage.

In summary, the exercise, as planned, produces a generalized, unquantifiable, benefit to the proponent (Atlantic Command) within the category of testing and enhancing operational readiness. Environmental impacts are essentially neutral in that pre and post-exercise conditions will be essentially unchanged. Steps have been taken to reduce or otherwise mitigate the potential for accidental damage. Basic procedural guidelines have been prepared and will be adhered to by responsible forces in the event accidental damage does occur. In view of the considerations noted above, and further discussed in this Assessment, as well as the fact that SS-83 is the only multi-component major troop exercise series conducted by the

Atlantic Command on a frequent basis, it is believed that the benefits accruable from the exercise, in the area of enhanced and evaluated operational readiness, outweigh the potential environmental impacts. Further, the various alternatives to the exercise fail to meet the overall existing requirements of the Atlantic Command.

The need to exercise plans and commands in a realistic scenario is a major concern in all exercises. However, because SS-83 is an exercise and not an actual contingency situation, the requirements for personnel safety, plan evaluation, and mitigation of environmental effects allow added emphasis to be given to the areas of personnel safety, hygiene, field sanitation, vector control, long and short-term environmental impacts, etc. Therefore, general rules of exercise play and procedural guidelines that stress the avoidance of any action which might endanger personnel or otherwise subject the personnel, equipment, or environment to substantial damage or destruction are being developed and evaluated.

The following rules of exercise play have been incorporated in exercise planning, thus far, in an attempt to ensure that goals of personnel safety and mitigation of adverse environmental effects are achieved.

1. Force movements are controlled and separated into phases with fixed limits of advance, as opposed to a free maneuver exercise in which forces move at will.

2. Personnel safety in the area of vector control requires that tick and mosquito surveys be conducted in areas of troop concentrations prior to bivouacs being established. Moderate to heavy infestations of ticks, mosquitos, and deer flies have frequently been observed in previous exercises. These infestations have resulted in personnel requiring medical attention because of adverse reactions, etc. Therefore, it is anticipated that, as in the past, control procedures will be initiated. Control procedures consist primarily of the issuing of personal protective insect repellants and area applications of pesticides by trained and certified personnel in pesticide application under a Department of Defense plan. All applications and disposal of residue and containers are in accordance with prescribed procedures.

3. Areas surrounding communication/radar equipment capable of producing hazardous levels of radio frequency (R-F) emissions will be posted at the appropriate distance to warn personnel that a hazard exists for people, fuels, and electro-explosive devices.

4. The use of live ammunition is prohibited, except at authorized target complexes. Blank small arms ammunition will be issued and used. The use of chemical and riot agents, except in small volumes under strictly regulated conditions, is prohibited. The use of blank ammunition, smoke pots, trip flares (which simulate trip grenades/mines) and other incendiaries will be suspended if the wildfire danger is deemed excessive, as determined by the host installation's forest fire index procedures. Deliberate setting of fires, including cooking or campfires, is prohibited.

5. The disposal of unused ordnance and pyrotechnics will be closely monitored and controlled. Unused ordnance and ammunition residues (cartridge casing, etc.) with the exception of expended small arms cartridges, will be returned to ammunition supply points for proper disposal, vice being discarded in training areas.

6. Camouflage activities are restricted by host installation regulations.

7. The intentional spilling of oil or other hazardous substances is prohibited. Department of Defense instructions on the discharge of oil or other hazardous materials will be adhered to, including DOD Directives. These directives require compliance with the National Oil and Hazardous Substances Pollution Contingency Plan, as well as implementing service, unified command directives and host installation regulations. Each installation/component has the required Spill Prevention and Control Countermeasures Plan and this plan will be followed by all units.

8. Off-road vehicle activity is to be held to a minimum, consistent with exercise training requirements. Tracked vehicles will be limited to those designated trails or other areas approved by and coordinated with the cognizant base or post commander. Slit trenches, foxholes and similar excavations will be filled prior to troops departing an area.

9. All solid wastes will be disposed of in sanitary landfills, in an approved manner, as directed by host installation procedures. Sanitary landfills are the only approved means of solid waste disposal for all troops, with the exception of UW personnel.

10. Human waste collection facilities, which will not pollute groundwater or endanger human health, such as chemical toilets or field latrines with concrete collection vaults, are the minimum acceptable human sewage disposal facilities in troop concentration areas (command posts or similar fixed areas). Human waste residues will be collected and disposal procedures

coordinated with cognizant local public health officials, or installation commanders, as appropriate. When available, suitable installed sanitary sewage facilities will be used. Shipboard generated sewage will be disposed of following Navy policy, which provides each ship with appropriate equipment to handle and dispose of sewage in accordance with the applicable Federal laws and regulations. Discharge of untreated "black water" sewage is prohibited within the navigable waters of the United States, which include the territorial seas (3 nautical miles) and all associated inland systems of water.

Discharges into the open ocean, by ships in motion, tend to be diluted, thus reducing their potential impact. Since most naval vessel activity will occur well offshore, potential impacts because of ship sewage discharges are greatly minimized. Generally, ship concentrations near the shore will be only those associated with a planned amphibious landing. During landing operations, sewage is minimal because of the limited duration and personnel intensive generation activities involved.

11. Stream crossings are restricted by the host installation to approved points, with vehicle washing in streams prohibited. The use of streams and ponds in the manuever area is restricted. These water sources will not be used to wash vehicles. No liquid discharges or refuse disposal will be allowed into the water courses. Streams will be crossed only at roads, bridges, and fording sites coordinated with the host installation. Restrictions on stream fording sites will reduce turbulence and the chance of accidental minor Petroleum, Oil, Lubricants (POL) spillage. All vehicle and aircraft washing will be confined to wash racks approved for use by the installation commander.

12. All bivouac areas will be thoroughly policed prior to final troop departure from the exercise area. Component commanders are responsible for the policing of maneuver areas utilized by their troops to assure cleanliness, etc. If necessary, troops will be returned to the area to effect adequate cleanup. Exercise and installation commanders shall ensure the expeditious repair of maneuver damage by maneuver units in accordance with the CINCLANT Letter of Instruction (LOI) and applicable host installation instructions.

13. All aviation operations shall be in accordance with procedures, restrictions, and associated agreements coordinated with the Federal Aviation Administration (FAA). These procedures will ensure aircraft on fire fighting missions receive airspace priority over exercise aircraft. Supersonic flights are prohibited except for limited flights in authorized areas over the Atlantic Ocean. Aircraft afterburner use will be

limited to situations wherein such use is dictated by flight safety requirements. Low level (below 1,200 feet) flight by high performance fixed wing aircraft will be limited to:

a. Takeoffs, landings, and operations in the proximity of targets within the exercise airspace;

b. Authorized airspace.

Flight time will be minimized, consistent with exercise requirements. Optimum cruise control procedures will be followed during administrative flights in order to reduce fuel consumption and pollutant generation.

III. AFFECTED ENVIRONMENT

The environment of the coastal plain province of the southeastern states has many similarities and can be described in general terms. This is particularly true for the military reservations located either on the coastal plain, or in the area of transition between the Coastal Plain and the Piedmont. As previously noted, more detailed information on the land maneuver areas is contained or referenced in Annex A.

The exercise will take place, insofar as practicable, on military reservations. Some remaining activities (principally UW) may occur in national and state forests or in rural areas adjacent to those military installation(s)/reservation(s) where troop concentrations and related activity will take place. Also, other areas under the OPCON of CINCLANT in a contingency situation may be used. No troop operations will be conducted in urban areas.

A. Physical Environment

1. Geology

The Atlantic Coastal Geological Province is characterized by unconsolidated sediments which were laid down in nearly level strata tilting generally seaward at a rate of a few feet per mile. The coastal plain is bordered on the east by the Atlantic Ocean and on the west by the Piedmont Plateau Province. The coastal plan formations consist primarily of marine sands, silts, and clays deposited from about 130 to 200 billion years ago. The older Yorktown formations have since been covered with a veneer of Pleistocene and recent dune and beach sands along coastal areas, and with non-marine deltoic sands, silts, and gravels inland. The unconsolidated sandy silts, fine sands, and clays found throughout the coastal area belong to the Pleistocene era.

2. Topography

The Atlantic Coastal Plain represents the emergent inner part of the Atlantic Continental inner shelf. As such, the surface configuration is relatively flat, ranging inland from the sea level areas at the coastline through the gently to sharply rolling ridge sections that mark the transition to the Piedmont Province.

3. Soils

Soils of the military reservations within the southeastern states can generally be described as rock free, sandy in character, with low organic matter, and low fertility. Surface soils are generally underlain by predominantly marine sands, clays, and silts. The surface soils are typically free draining. However, periods of heavy rainfall often result in poor trafficability because of a high surface water table that results from the relatively inadequate subsurface drainage of the silty, fine sand and clay soils that underlay the surface layers. The soils of the lower elevations are usually heavier in texture and poorly drained or swampy. It should be noted that many of the Coastal Plain military reservations were acquired in the early years of World War II. The government purchased those lands that were the least expensive, i.e., generally the least agriculturally productive. Thus, not only are the military reservations similar in their physical environment, but also, they are generally similar in fertility and biotic communities.

4. Groundwater

Groundwater in the coastal plain is commonly found in three principal hydrogeologic units; the cretaceous aquifer system, the tertiary aquifer system and the water table or quaternary aquifer; and in the westernmost areas, the triassic aquifer. Throughout the coastal plain, rural areas rely on wells for residential and agricultural water supply.

5. Climate

The southeastern-coastal plain is located in a humid subtropic climatic zone that is characterized by mild winters and hot, humid summers. Spring and fall are usually distinctive and the most pleasant time of the year. June through August are the hottest periods, with December through February the coldest periods. Mean temperatures range from 47°F through 77°F at Norfolk, Virginia, to 64°F through 80° at Jacksonville, Florida. Annual precipitation is generally well distributed

throughout the year. Heaviest rainfalls occur in July and August, with fall, particularly October, the dryest part of the year.

6. Air Quality

Air Quality through the rural coastal plain is influenced by the terrain and meteorological conditions, as well as the urban areas, with their concentrations of pollutant sources. Generally, the air quality at military reservations is within the national primary and secondary ambient air quality standards set by the Environmental Protection Agency. The most probable exception would be Photochemical Oxidents at those installations located in urban and/or industrialized air quality control regions.

B. Natural Environment

1. Biota

The conceptual term "biotic community" is used to designate a distinct assemblage of plants and animals. In general, biotic communities are identified on the basis of their dominant vegetation, by physiography. The major biotic communities present within the coastal plain are:

Coastal Fringe Communities

- Beach
- Dune
- Maritime Shrub Thicket
- Maritime Forest

Coastal Plain Communities

- Swamp Forest
- Pocosin
- Longleaf Pine-Turkey Oak Forest
- Loblolly Pine-Longleaf Pine Forest
- Hammock Communities
- Inland Bogs and Marshes
- Ponds and Lakes

Estuarine Communities

- Open Water
- Tidal Marshes
- Tidal Flats
- Fluvial Swamps

Other Communities

Agricultural Lands, Oil Fields, Pine Plantations
Man-dominated Communities

All biotic communities are dynamic and evolve toward a steady-state equilbrium with their surrounding physical environment. This is particularly true of the coastal communities because of the often rapid allogenic and/or autogenic changes associated with their physical parameters. The flora and fauna respond to these changes through the process known as ecological succession. As a consequence of succession, many of the habitats in the Coastal Plain represent intermediate phases of the distinct biotic community types cited above. An example is a mixed pine-hardwood complex that is intermediate between a pine-dominated community and a hardwood-dominated community.

Biotic communities seldom change abruptly from one community type to another. Instead, they blend more or less continuously into each other, producing a transitional zone known as an ecotone. Ecotones typically contain an overlapping of floral and faunal components from both adjacent communities, as well as species which prefer the ecotonal habitat. Thus, ecotones are often highly diverse areas and are important as wildlife habitats.

A large variety of common wildlife such as deer, squirrel, rabbit, quail, raccoon, muskrat, opossum, and water fowl inhabit the manuever areas of the coastal plain. Non-game species, which comprise the largest amount of wildlife resources, that are common in the areas, include skunks, mice, rats, shrews, and various avian species.

Each of the military installations utilized for the exercise has a wildlife management plan developed by the base Natural Resources Department, in cooperation with state and Federal wildlife agencies. The plans are updated on a regular basis. These plans usually divide the bases into wildlife management units with management emphasis placed on practices determined best for that unit. Local emphasis is usually directed toward management of forests, forest game species, and endangered species.

2. Threatened or Engangered Species

The Endangered Species Act of 1973 directed the Department of Agriculture, Interior and Defense to protect endangered species and their habitats on lands which they administer when such actions are consistent with the mission of the area.

Section 7 of the Endangered Species Act requires Federal agencies to consult with the Fish and Wildlife Service and the National Marine Fisheries Service to ensure that actions that they authorize, fund, or carry out do not jeopardize the continued existence of an endangered or threatened species or result in the adverse modification or destruction of their ciritical habitat. For the most part, this coordination/consultation has been accomplished by the installation commanders and review of pertinent correspondence and comments will be incorporated into the decision making process prior to the determination to hold the exercises as it is conceptualized.

Threatened and endangered species known to inhabit the Federal reservations, within the southeast, and most likely to be affected by the exercise, are listed in Table I-1.

Of the endangered or threatened species listed in Table 1, the following are afforded special considerations on military installations, and measures to protect their habitat are taken:

The Red Cockaded Woodpecker, a resident in mature and oldgrowth pine woodlands from southeast Oklahoma, Arkansas, western Kentucky and southeast Virginia, south to the Gulf Coast and southern Florida, is uncommon and very local through most of its current range. The Red Cockaded Woodpecker prefers open pinewoods and its requirement for mature pines for cavity construction is well documented. The development of a dense hardwood understory causes the bird to abandon the territory, especially when this development prevents access to its cavity. Home range may vary from 25 to 150 acres, depending on timber type, stand density and the number of birds.

On the affected military reservations, cavity trees and varying amounts of adjacent land are protected from logging. Each installation is continuing coordination with the Fish and Wildlife Service in compliance with the regulations for Interagency Cooperation--Endangered Species Act of 1973.

The wildlife management programs of those installations, which may be utilized for the exercise, now provide protection for the woodpecker habitat ranging from inventorying and marking of cavity trees, and prescribed burning, to marking of 100 acre tracts of mature pine habitat surrounding the trees and ensuring these areas are off limits to training activities involving tracked vehicles. Wheeled vehicles are restricted to existing roadways within these habitat areas, and ground forces are generally excluded from the habitat areas by marking them off

Table 1

LIST OF ENDANGERED AND THREATENED SPECIES

SPECIES	PREFERED HABITAT	STATUS
BUMELIA THORNET Buckthorn	Dry live oak woods and scrub oak sandhills	Endangered
CALAMOVILFA BREVIPILIS Riverbank Sandreed	Bogs and savannahs	*Threatened
DIONAEA MUSCIPULA Venus' Fly-Trap	Wet sandy ditches savannahs open bay margins	*Threatened (exploited)
ELLIOTTIA RECENOSA Elliottia & Georgia Plum	Sand and oak ridges, evergreen hammocks in xeric areas	Engangered
EUPATORIUM RESINOSUM Resinous Joe-Pye-Weed	Lowland & upland bogs	*Threatened
HABENARIA BLEHARIGLOTTIS White Fringed Orchid	Peat siols of wet bogs and Savannahs	*Threatened
HABENARIER CILIARIS Yellow Fringed Orchid	Solitary in bogs and pocosin margins	*Threatened
HEXASTYLIS LEWISII Lewis' Heart Leaf	Deciduous woods, pine forests, or low swampy woods	*Threatened
ILEX AMELANCHIER Sarvis Holly	Sandy swamps, wooded stream/ river banks	*Threatened
KALMIA CUNEATA White Wicky	Sandy, peaty soils, borders or thickets & shrub bogs, pocosin ecotones	Endangered
LARRACENIA FLOVA Golden Trumpet, Flycatchers	Acid soils of open bogs savannahs and low areas of	*Threatened

LITSEA AESTIVALIS Pond Bush-Bond Spice	Margins of swamps and	*Threatened
LYSIMACHIA ASPERULAEFOLIA Rough Leaf loosestrife	Upland bogs	Endangered
NESTRONIA UMBELLULA Nestronia or Bog Asphodel	Dry Woodlands	*Threatened
PYXIDANTHERA BARBULATA Pixie-Moss	Xeric sandhills	Endangered
RHUS MICHAUXII False Poison Sumac	Sandy or rocky open woods	*Threatened
RUDBECKIA HELIOPSIDIS Black-eyed Susan (uncommon)	Woodland meadows and low ground	*Threatened
SARRACENIA FLAVA Yellow Pitcher Plant	Wet bogs, ditches and savannahs	*Threatened
SARRACENIA MINOR Hooded Pitchers Plant	Acid soils of open bogs savannahs & low areas of pine flatwoods	*Threatened
SARRACENIA PURPUREA Pitcher Plant; Flytrap	Wet bogs and savannahs	*Threatened
SARRACENIA RUBRA Sweet Pitcher-Plant	Shrub bogs & savannahs	*Threatened (exploited)
SPOROBOLUS TERETIFOLIUS Wireleaf Dropseed	Savannahs & pine barrens	*Threatened
THALICTRUM COOLEVI Cooley's Meadowrue	Savannahs	Endangered

ALLIGATOR MISSISSIPPIENSIS Alligator	Salt marshes, tidfal streams and estuaries	*Endangered
CALAMINTHA DENTATA Calamentha	Sandhills, sandy oak woods	*Threatened
CARETTA CARETTA Atlantic Loggerhead	Warn ocean water Nests along beach	*Threatened
CHELONIA MYDAS Atlantic Green Turtle	Shoal waters with submarine vegetation	*Threatened
CROTALUS ADAMANTEUS Eastern Diamond Rattlesnake	Sandy pine flatwoods and thick bogs	*Threatened
DENDROCOPUS BOREALIS Red-Cockaded Woodpecker	Primary in longlead timber	Endangered
DERMOCHELYS CORIACEA Atlantic Leatherback	Open sea waters along the coast	*Endangered
DRYMARCHON CORAIS COUPERI Indigo Snake longleaf pine, wire grass communities	Xeri areas of coastal plan sand-hill communities of turkey oak/	*Threatened
ERETOMOCHELYS IMBRICOTA Atlantic Hawksbill	Reefs and shallow coastal	*Endangered
FELIS CONCOLOR COUGAR Eastern Cougar	Deep swamplands Very infrequent	*Endangered
FOTHERZILLA GARDINIE Dwarf Witch Alder	Low flat swampy areas and	*Threatened
HYLA ANDERSONI Pine Barrens Treefrog	Shurb bogs, pocosins	*Threatened

LEPISLOCHELYS KEMPI Atlantic Ridley	Shallow coastal waters Casual visitor	*Endangered
MICRURUS F. FULVIUS Eastern Coral Snake	Sandhills, dry pine flatwoods and sandy maritime forests	*Rare/Threatened
AMMOSPIZA MARITIMA Dusky seaside Sparrow	Coastal marshes Winter migrant	*Endangered
HALIAEETUS LEUCOCEPHALUS Southern Bald Eagle	Sounds and rivers Very few sightings	*Endangered
PASSERCULUS PRINCEPS Opswich Sparrow	Winter migrant along dunes and salt marshes	*Threatened
PELECANUS OCCIDENTALIS Brown Pelican Summer migrant	Coastal fringe along beach and inlets	*Endangered

* Species on a state list of Endangered Plants and Animals, or which are considered threatened locally by installation wildlife personnel.

limits, or minefield, etc. Exercise participants will conform to the host installation procedures for protection of this species.

The American alligator ranges from the southern portions of Albermarle Sound, North Carolina, south on the coastal plain throughout Florida, west to east Texas and north to south Arkansas. The alligator occurs in coastal rivers, lakes, marshes, and estuaries. Because of its large size and aquatic habitat, exercise participants are unlikely to have a direct impact on the alligator. However, it is recognized that some exercise activities could be deleterious to the alligator's habitat, e.g., stream crossings will be restricted to locations determined by installation wildlife management personnel and approved by the installation commander.

The Pine Barrens Tree Frog, listed as endangered in Florida, has a range of apparently disjunct populations in southern New Jersey, North and South Carolina, Georgia, and Florida. The pine Barrens Tree Frog occurs almost exclusively in or near pocosins or shrub bogs, with dense growths of pines, bays, and various ericaceous shrubs. No active management techniques have been applied to this species by installation wildlife management personnel. Habitat preservation, which is consistent with the missions of the installations, remains the only management technique.

The Atlantic Loggerhead Turtle, which ranges from Nova Scotia to Argentina; and the Green Turtle, whose range is essentially tropical waters from Massachusetts to Argentina, are known to frequent the offshore waters of the southeastern United States, and Caribbean, as are the Atlantic Leatherback, Hawksbill, and Ridley turtles.

Both the Loggerhead and the Green turtles are known to use the beaches of some military reservations for nesting during the May through August period. Management practices consist of Natural Resources Department personnel placing wire cages over all active nests to protect them from predators, such as foxes, or raccoons, and diverting troop activities to prevent accidental disruption by troops.

In summary, Federal and state inventory lists of rare and endangered plant and animal species are available at each reservation. The Natural Resources and/or Environmental Affairs Departments of the installations have initiated endangered species programs and have completed, or are involved in, negotiations under the Interagency Cooperation Regulations. The inventories, established programs, and staffs appear to be sufficient to ensure a successful long-range

program consistent with the military installation missions and exercise activities for the protection of threatened and endangered species.

C. Socio Cultural

1. Land Use

Land use on the military installation of the southeast is similar in that there is usually a main cantonment area where personnel support, housing, administration, maintenance and supply, and other such related activities are located. The remainder of the reservation is then devoted to training ranges, including impact areas and safety zones and maneuver areas and/or areas necessary for the accomplishment of the base mission, e.g., training ranges, runway, hangar areas, etc.

In most instances, off-base areas surrounding the military reservations have developed as commercial/residential areas dependent upon the economy of the military base. The areas surrounding the installations, and not dependent upon it for economic viability, are generally agrarian in nature with tobacco, corn and soybeans as principal cash crops. Also livestock, such as swine, cattle, and chickens, are often important sources of revenue, as is the forestry industry.

2. Economy

The traditional economy of the coastal region has centered on agriculture, forestry, commercial fisheries, and recreational tourism. Socially induced trends of population migration away from rural farm areas, competition with high productive agricultural regions, and the trend toward "super size" farms have succeeded in reducing the number of farms. The most important crops are corn, soybean, and produce, with locally significant amounts of peanuts, tobacco, and other cash crops. Poultry, swine, and livestock production is a major industry in some Coastal Plain areas.

Forest products have contributed significantly to the economy of the coastal region since Colonial days. However, historically important naval stores (turpentine, tar, etc.) have given way to lumber, pulp and pulpwood production from commercial forests and tree farms.

3. Parks, Historical and Cultural Properties

In an attempt to provide the resources of the exercise area, the legal protection of Section 106 of the National Historic Preservation Act and Executive Order 11593, the National

Register of Historic Places was consulted. The National Register identifies no historic resources that will be affected by the proposed exercise.

A National Register property is located on one of the potential host installations. This installation, in coordination with the state office of Historical Preservation, has developed and implemented a plan for protection and enhancement of the historic property. This property will not be affected by the proposed exercise as it is not located in an area of exercise activity.

A preliminary archeological survey of one of the potential host bases also has revealed the presence of a national resource of potential importance. The artifacts consist of arrowheads, broken knife blades, flint chips and broken pottery, thus, giving evidence of early Indian inhabitance of the area. Such artifacts also may occur at other installations where exercise activity may take place. The known location of archeological sites at the installation are classified "administratively confidential" to preclude disturbance of the sites by amateur archeologists or souvenir hunters before they can be surveyed by a competent archeologist.

Numerous parks and recreation areas occur on the installations and adjacent communities. The exercise may interrupt use of some recreation areas on host installations or in the community. These interruptions will be temporary in nature and last only as long as necessary. Once the exercise is completed, they will revert to their previous use. Off-installation recreation areas use will consist of establishing temporary/portable communications or radar sizes consisting of self-contained vehicles and small numbers of support personnel.

D. Infrastructure

1. Water and Sewer Systems

For the most part, military installations in the southeast have their own water and sewer systems. In urban areas, these systems are linked to the public systems. In the rural areas, wells or local riverine systems are the source of water, with some type of monitoring and treatment to ensure water quality. Installation sewer systems are connected to a treatment plant, providing at the minimum, primary treatment with effluent being discharged to a receiving water. In remote locations, an on-station activity may be served by a septic system. Each installation, under the direction of its major claimant, is in the process of upgrading, or has upgraded, its treatment plant to meet state and federal standards for effluent discharge. Maneuvering units, training on an installtion, are required to adhere to installation regulations and service Standard

Operating Procedures (SOP) for field hygience and sanitation. This SOP required that the minimum acceptable sewage disposal facility for personnel concentrations engaged in field training exercises (FTX) is the chemical toilet or concrete collection vault. Maneuvering units may employ slit trenches, pit latrines, urinal pits, straddle trenches or "cat holes" in accordance with the appropriate component field hygiene and sanitation manual, and installation regulations, as dictated by exercise play. However, host installations directives will govern procedures in all cases where conflict may arise.

2. Solid Waste Disposal

Solid waste generated by the exercise components will be collected and disposed of in accordance with host installation procedures. In all instances, these procedures require that all solid wastes be collected and disposed of in a sanitary landfill. In most cases, the landfill is located aboard the installation. Each installation has specific guidelines pertaining to the logistics of the trash collection system (e.g., G.I. cans, dumpsters, or trash bags) including the responsibilities for delivery to the landfill. It should be noted that no installation allows disposal of solid wastes outside the landfill by burial, burning or other means. UW forces may bury their solid wastes when no other means of disposal is available. Appropriate field manuals will be followed to ensure that UW wastes are buried at sufficient depths to preclude animals from detecting and uncovering the disposal pit.

3. Utilities

Electric power and telephone services are available at all military installations in the southeast. In some instances, the installation supplements power purchased from private or public utilities with peak load generating plants and/or operates on on-base telephone systems. Field units will be operating under combat conditions and, thus, will require mobile power sources. Field headquarters, partucularly, will utilize field generators to power communications equipment and lighting.

IV. ENVIRONMENTAL CONSEQUENCES

A. Physical Environment

1. Geology

The proposed exercise will not have any impact on the geologic formations within the Coastal Plain. This determination is based on the small scale of actual field maneuvering and related

military activity and the fact that no large scale, concentrated or high explosive bombing or bombardment is planned, nor is any major construction activity planned in support of, or as part of, the exercise.

2. Topography

The topography of the military installations where concentrated exercise activity will take place will not be altered by the movement of vehicles and troops to and from the headquarters bivouacs in the deployment/redeployment phase or during the employment phase of those troops conducting field maneuvers. Some limited beach damage will occur in the vicinity of the landing operations from heavy trucks, cargo handling equipment, and tracked vehicles. If soils are disturbed on sloped areas, the problem of erosion of exposed soils will be accelerated during periods of heavy rainfall. If uncontrolled, or on a large scale, localized adverse impacts to the topography, as well as a decrease in the water quality, of receiving bodies of water could occur. Based on the relatively small number of maneuvering units and the fact that training maneuvers, including bivouacs and engineer training, occur on the host installations on a regularly scheduled basis with seemingly little significant adverse effects on topographic features, it has been determined that no significant impact on topography will occur as a result of the proposal.

In sum, the exercise is neither site specific nor site intensive to the degree that the topography would be affected. However, some impact on soils will occur as described in the subsequent paragraphs.

The majority of SS-83 activity consists of the insertion of mobile troops in a field environment. Component maneuver elements will remain mobile within the confines of the host installations. The passage of heavy trucks and equipment to the bivouac areas, and elsewhere in the field from their points of departure, will be over established roads for the most part. This type of traffic will have a minimum impact on local soils.

Tracked and wheeled vehicle off-road movements by maneuvering units do have the potential for significant localized and long-term impacts to soils. However, most of the off-road movements will occur within existing tracked vehicle maneuver areas. In those areas not already maintained as trails, the vehicle tracks will compact the soil and crush and existing stabilizing vegetation consisting of shrubs and ground covers. In some areas, particularly high traffic or maneuver areas, the surface layer will be seriously damaged, exposing the less fertile sandy subsoil which is less capable of supporting

vegetation. In areas where the vegetation is destroyed or damaged, the loose soil will be subject to the erosive effects of wind and rain until such time as sufficient vegetaion has recovered to stabilize the soil. Prevailing winds and rainfall will tend to fill in the low areas with soil until vegetation is established. As vegetation develops, there will be a tendency for stabilization of the ruts to occur. Thus, without repair, the scarred surface could become a permanent mark on the terrain. In areas where the surface layer is destroyed and the subsoil exposed, natural stabilization may not occur for several years after the exercise. In sloped areas, the disturbed areas would continue to be subjected to water erosion until corrective actions were taken, resulting in increased siltation of adjacent streams with every rain. Thus, to preserve the ecological status quo, as well as the tracked vehicle maneuver areas, repair to these areas by grading and/or seeding may be required by host installations. Because of the relatively low mileage per vehicle in an off-road mode, the total impact on soils as a result of the exercise, although considered adverse, is not considered significant.

3. Groundwater

Troops operating in cantonment areas will use existing water and sewage facilities. In some locations, water dispensing facilities are available for field headquarters who will use approximately 60 gallons per man of potable water per day, field elements will require 5 gallons per man. In other locations, water primarily will be either brought from an existing source (water point) by trailer, or in remote instances, water could be obtained on-site from an existing water course and treated by a portable treatment system. If this is the case, purification equipment will not be backwashed into water courses since backwashing produces water that is high in suspended solids. This water will be discharged to a soakage pit constructed in accordance with the applicable component service field manual as will all soakage pits for personal hygience and other "grey" water. Sewage generated by bivouac personnel will be collected from "porta potty" facilities or similar structures and discharged to the installation sewage plants or approved septic systems.

These procedures are not anticipated to overly tax existing systems and should essentially minimize the adverse potential impacts that could occur from concentrated personnel.

Maneuver elements will utilize slit trenches, pit latrines, urinal pits, straddle trenches or "cat holes" constructed and maintained in accordance with the applicable component field manual. In no instance will these types of structures be sited

closer than 200 feet to a water source or in wet areas. Also, slit trenches, etc., will not be used in areas where more than 50 troops occupy an area for longer than 24 hours.

Some localized degradation of surface waters will occur from the natural purification process of soakage pit and straddle trench leachate. The distance restriction from water courses should provide ample protection of surface water quality.

Refueling of vehicles and aircraft by tankers, fuel pods, bladders and five-gallon cans all provide a potential for petroleum, oil and lubricant (POL) spills. In all instances of fuel storage and vehicle refueling, the component field manual for the handling of POL products will be complied with. This will include the construction of an impervious berm around fuel bladders or tanks with a 500-gallon or more capacity to contain fuel if a mishap were to occur. Any POL spill greater than 25 gallons on land or any spill which produces a visible sheen on a water surface will be reported to the cognizant installation commander to ensure implementation of the Installation Spill Control and Countermeasures plan.

The operation of vehicles over vegetated terrain will result in increased sediment loads and turbidity from run-off in receiving waters during periods of heavy rainfall. This impact will continue to exist after the redeployment of personnel until the affected areas are revegetated. If natural recovery is allowed, with no impetus in the form of mulching or seeding, then the process will minimally require one complete growth cycle, i.e., surviving vegetation must grow, go to seed, and the seeds must take root. Dependent upon the type of groundcover, this may require in excess of one year.

The extent of surface water contamination or the degree of degradation is impossible to predict. However, because of the short duration of the exercise and the procedures to be taken to preclude uncontrolled contamination, surface water degradation, if it occurs, will be localized and temporary in that it is not expected to persist for a lengthy period.

4. Climate

Based on the relatively small scale of the exercise, the equipment that will be utilized, the large maneuver area, and the objectives of the exercise, the climate of the area will not be affected.

5. Air Quality

Air contaminants will be generated by weapons firing, vehicular usage, and small generating activities.

a. Weapons. Oxides of sulfur and nitrogen are added to the atmosphere by weapons firing in amounts which cannot be quantified because of the dispersion of troops throughout the area. Considering the restrictions on live ordnance, the nature of the area wherein firing is likely, air volume and movement, the type of weapons, used, and the intermittent nature of the firing, it is considered unlikely that these contaminants will have a measurable effect on ambient air quality outside a radius of several hundred feet from the firing points.

b. Vehicles. Dust, particularly that caused by trucks, tracked vehicles, or helicopter operating in unpaved areas, will be generated principally in dry areas. Dust and other solid particulates, if generated, are expected to settle out quickly; although, the rate is a function of particle size, the velocity of the transporting media, temperature, and other geophysical considerations. No effect by dust generating activities beyond an extremely localized area downwind of the source is anticipated. Dust settling on vegetation is removed by natural processes and has not caused any apparent damage to roadside areas adjacent to heavy year-round traffic routes on any of the affected installations.

c. Internal Combustion Engines. The employment portion of the exercise will be the period of maximum use of support equipment. Pollutants from internal combustion engines will be widespread, in both time and location, and will dissipate under normal climatic conditions.

d. Smoke Generating Activities. It is estimated that as many as 100 HC smoke pots may be used for screening friendly operations from "enemy" observation during SOLID SHIELD 83. These munitions will be utilized from screening of drop zones, landing zones, supply operations, and other activities which would benefit by denying observation to the opposing forces. The ABC-MM5 pound HC smoke pot is a metal container, 8 1/2 inches in diameter and 9 1/2 inches high, filled with approximately 30 pounds of HC smoke mixture. The munition can be ignited manually or electrically. HC is composed of a mixture of grained aluminum (Al), zinc oxide (ZnO) and hexachlorothane (C_2Cl_6). Percentages by weight are as follows:

Al	6.88
ZnO	46.66
C_2Cl_6	46.66

Smoke generation will have only a temporary, insignificant impact in the affected areas. These areas will be isolated from civilian facilities and major highways. The size of the area affected will be determined by micrometerological condition at the time of employment and the number of smoke pots employed at any one time. Maximum affected area at any one time will be approximately 1 km^2. The effective smoke screen from one smoke pot would extend approximately 300 to 500 meters.

Employment of smoke pots will have an insignificant long-term impact on the environment. There will be a short-range impact on a highly localized portion of the environment in the immediate vicinity of the munitions. HC smoke produces little or no physiological effects in low concentrations. It has a slightly acid odor. In high concentrations, such as might be encountered very near an operating munition or during prolonged exposure to ordinary field concentrations, a sufficient amount of zinc chloride may be encountered to produce toxic effects, and the protective mask should be worn. No protection is required in normal field concentrations. No decontaminants are required. Concentrations of HC smoke that are developed during SOLID SHIELD 83 should dissipate-within 45 minutes to one hour after the 12- to 22-minute burning period. Under the most favorable weather conditions for this material (inversion temperature gradient and winds less than five knots), the smoke should be reduced in effectiveness after one-half hour, but could remain in the area up to four hours.

This munition does burn with intense heat and could cause fires in dry underbrush or grassy areas. Controllers and troops in the vicinity, including the operators of the munition, will observe them until extinguished. After burnout, the munition will contain small amounts of solid aluminum oxide. Residue will be collected by controllers and disposed in an existing sanitary landfill.

Most of the HC smoke will dissipate into the atmosphere with no known long-range adverse impact. The burning mixture in the smoke pot produces zinc chloride ($ZnCl^2$), carbon (C), and intense heat. The zinc chloride absorbs moisture from the air and produces the majority of the effective smoke particles. During the process of smoke formation, small amounts of volatile aluminum chloride and hexachloroethane are lost as vapor. Experience to date has not indicated any long-term impact on fish, birds, or animals.

Air pollution permits are not obtained for smoke generation on military installations as this activity is considered an intermittent mobile source. Liaison with the applicable State Air Pollution Control Agency and the EPA is the responsibility of the host installation commanders and is accomplished by them on a case-by-case basis.

In summation, there will be no significant long-range, adverse impact on air quality as a result of the exericise. The exercise will result in some minor localized adverse impacts on air quality due to weapons firing, vehicular usage and smoke generation. However, these activities will not result in a degradation of overall air quality, based on the fact that they are short-term in nature and do not exceed the assimilative capabilities of the areas.

B. Natural Environment

The impacts on the natural environment that result from the exercise will primarily consist of the destruction of natural habitat and food supplies that will occur from maneuver troops, the Amphibious operation, and the Field Headquarters/Command Posts.

In maneuver or heavy traffic areas, vegetation, including ground cover, small trees and shrubs, will be destroyed. In field Headquarters areas and other troop concentrated areas, the vegetation will be trampled by the repetitious movement of individuals between functional areas. In addition to the actual crushing and uprooting of vegetation, some mortality will result from damage to roots and tree trunks that may not be apparent until after the exercise. Should heavy damage occur, long-term changes in the vegetative patterns could be expected. While the vegetation destroyed will consist of ground cover, shrubs and some trees, only the ground cover could reasonably be expected to reestablish itself in a relatively short time frame. Thus, the exercise could result in a less diverse vegetative cover in the areas of concentrated activity.

One temporary benefit that may result is that there may be increased sprouting of vegetation in response to the soil disturbances caused by troop and vehicle passage. However, this effect is unquantifiable even though the exercise will take place early in the growing season.

The most significant impact on fauna will be the loss of or damage to natural habitat and food as a result of impacts on vegetation. It is anticipated that avian and terrestrial species will only temporarily relocate to other habitat areas if disturbed by personnel.

Crossing of streams by vehicles will increase turbidity in the waters and could adversely affect the habitat of the aquatic species present. Any fording of streams by vehicles will result in the creation of avenues of erosion leading to increased siltation of the streams. Fuels and lubricants on the exterior surface of the vehicles will enter the streams during fording operations. Although washing operations are prohibited in streams, soaps and detergents from unauthorized operations would add to the impact. This pollution, plus that from runoff, will temporarily alter the natural habitat of the species present, and may adversely affect some species.

In sum, exercise activity will result in disturbing some species which may temporarily relocate from their range and some mortality from vehicles and personnel is anticipated for the less mobile forms of wildlife. However, the impacts on the flora and fauna of the areas of concentrated activity are not considered to be either of significant magnitude or duration to upset or significantly alter the ecological balance in the training areas.

1. Threatened or Endangered Species

The accidental destruction or disturbance of the habitat of the endangered or threatened species remains a reality. However, the likelihood of appreciable destruction or alteration of endangered species habitat occuring, in light of the precautions taken by host installations wildlife managmenet personnel, is considered remote. Further, should an incident occur, it is considered that damage to habitat would be minimal and would not threaten the continued existence or propogation of the species. It is recognized that the possibility of some mortality to a small number of endangered or threatened species is possible (details in Classified Section).

C. Socio Cultural

1. Economy

Land use on the affected installations will not be altered in that the location of Field Headquarters units and the maneuvering of troops in training areas is a common occurence. UW operations that may occur off-post will, if effective, remain unnoticed by the local populations. No segment of the population other than exercise participants will be displaced by the proposal.

No residential displacement or permanent disruption of community life will occur as a result of SOLID SHIELD 83, nor will any subsequent development activities occur as a result of the

proposal. The economic impact of the exercise on the local area is not readily quantifiable. However, it is considered to be slight in that personnel involved in the exercise are wholly transported and supported by their commands. Thus, there are no requirements to purchase goods or supplies from local sources.

2. Parks, Historical and Cultural Properties

There is the possibility that the exercise may damage unknown archeological or historical sites which have scientific value. This is considered unlikely because the Training Exercise will not be occuring in any areas that have not been exensively used by troops for training evolutions on a regular basis.

If any site of potential historical or archeological importance is encountered during the exercise, the host installation commander will be notified. The field commander will order actions in the vicinity halted and the area marked. The installation commander, in turn, will then comply with the applicable DOD and component procedures to determine the significance of the find.

No parks or recreation areas will be adversely affected by the activities that occur during the exercise. Some on-post recreational areas located in maneuver areas may be closed temporarily because of military activities that could present a safety hazard to individuals. These closures will be temporary and primarily will affect active duty personnel and their dependents only. Access to small portions of other State and/or Federal recreation areas may be restricted because of portable communications/radar units.

D. Infrastructure

1. Water and Sewer Systems

The impact of the water and sewer systems will consist of additional water to be provided and possible additional sewage to be treated at those host installations that will realize an increase in personnel who will use existing sewage systems. The increase in water demand or sewage load will not exceed the capacity of these facilities; particularly in light of the fact that most ashore participants will be deployed in the field.

2. Solid Waste Disposal

Waste material will be compacted and buried at approved host installation land fill sites. No debris, other than spent small arms blanks and UW forces refuse, is to be abandoned in the field. However, as previously stated unauthorized waste

disposal may occur. To preclude any health hazards occurring, base commanders will inspect the maneuver area and detain any troops necessary to properly police the area.

E. Other Potential Impacts

1. Wildfires

The possibility of an accidental wildfire resulting from the exercise is recognized. The exercise period, as proposed, falls before the peak wildfire season; nevertheless, extreme caution is imperative as wildfires may seriously affect the environment of the areas consumed and require years for nature to restore the area to pre-fire habitat conditions. Wildfires may reduce available resources, destroy wildlife habitats, endanger life (human, animal and plant), increase erosion potential, reduce nutrients, increase air pollutant levels, alter wildlife habitat patterns and generate additional primary and secondary effects too numerous to list. Close coordination with Federal and State officials and non-government agriculture and forestry personnel is underway in pursuit of fire avoidance. Fire fighting programs geared to the exercise are the responsibility of the host installation. In the final analysis, the potential for forest fires will be determined by the host installation forest fire index and the SOP of the installations will be adhered to.

2. Noise

Noise generated as a result of SOLID SHIELD 83 primarily will result from vehicular and aircraft activity and firing small arms blanks. Animals, particularly wild animals not accustomed to human generated noise, can be expected to temporarily move from areas where exercise associated noise generates annoyance. However, areas where exercise associated noise generates annoyance. However, permanent habitat abandonment is unlikely, thus, minimizing potential secondary effect which movement to new ranges would generate (i.e., overpopulation, overgrazing, etc.). Exercise associated aircraft operations from airfields and landing zones will generate relatively high localized noise levels. This may prove an annoyance or nuisance factor to personnel in adjacent areas. However, such operations generally fit the normal airspace use patterns in the area. Low-level flight (below 1,200 feet), except for high performance aircraft simulating attacks on assigned targets, are generally restricted to take-off and landing evolutions and flights by helicopters and observation aircraft. These "target runs" generally require low-level, high-speed flight for brief periods over a relatively small area in the target vicinity. The remainder of the flight profile flown by high performance aircraft is generally accomplished at altitudes in excess of 3,000 feet.

3. Radio Frequency Emissions

Operation of communication/radar equipment will result in localized short-term increases in nonionized radiation. There is a potential electromagnetic interference problem with nonparticipating agencies; however, electromagnetic frequencies are coordinated with a DOD agency frequence manager to reduce the possibility of interference. Observation of appropriate safe lateral distance criteria for each emitter will ensure that any hazard to personnel, wildlife, or property is minimized.

4. POL Spills

In spite of precautions, the potential for spillage from an accident exists. Certain discharges due to safety practices, such as those which might involve purging contaminated fuel systems, also are possible. In this light, it should be noted that Department of Defense Directives state that DOD components will not discharge oil or other hazardous materials into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the contiguous zone. In addition, oil and oily wastes should not be discharged from any Navy activity or ship within the "prohibited zone", i,e., within 50 miles of the coastline of the United States or its possessions. Petroleum, oil, lubricants, and material requirements are an important part of every action involving personnel and equipment. In-place facilities and temporary fuel farms ashore will be used; appropriate spill control and countermeasure plans have been developed and are ready for implementation.

5. Damage Repair

Despite the general precautions noted, accidental damage is possible. Experience in similar exercises has indicated that the effects of such damage can best be minimized by augmenting the basic precautionary measures with damage repair procedures pecular to the exercise. The repair and clean-up procedures followed by exercise participant troop commanders and the attendant use of participating engineer personnel will minimize the effects of accidental damage to military installations. Additionally, damage to roads, pine plantings, drainage structures, and other natural or man-made features will be expeditiously reported via the nearest telephone or radio facility to the appropriate host installation's Public Works activity.

The states and/or area development and planning commission and/or local governmental units in the areas where the proposed exercise will take place all practice some form of land use planning and controls. These controls range from state Coastal Zone management programs through area-wide programs down to

local zoning and specific local ordinances. The doctrine of Federal Supremancy exempts the installations from these programs. Where the Congress has required adherence to state legislation, as is the case in some environmental legislation, such as the Clean Water Act or Other Federal legislation, such as the Engangered Species Act, Historic Preservation Act, etc., compliance is required and these laws will be adhered to.

F. Indirect Effects

Long-term, indirect effects include the increased ability to develop realistic CINCLANT plans, higher levels of proficiency for the combatants, and greater understanding and cooperation between the Joint Services. Similar benefits also accrue to the participants in the exercise.

Exercise activity will not preclude future use or enjoyment of any significant natural or depletable resources; nor does it commit these resources to a large-scale requirement.

G. Energy Requirements

The Energy resources required by the exercise, as well as the attendant resources required for planning and executing the exercise, will be consumed should the exercise take place as planned. Fuel expended for the exercise purposes occurs within the framework of overall component service and Department of Defense energy allocations and programs and is not in excess of these allowances.

In summation, the exercise, as planned, will not produce a significant effect curtailing the beneficial use of natural or depletable resources. Further, the exercise does not constitute a commitment of resources to some future requirement. SOLID SHIELD is an elected exercise to test and evaluate capabilities of the Atlantic Forces, and as such, its need is frequently evaluated and a determination made on scenarios and scheduling. Conservation of matural and depletable resources is an integral part of this planning process.

V. PROPOSAL EVALUATION AND CONCLUSION

The proposed exercise as described and assessed in this document, and the classified Annex, is not expected to result in significant environmentally based controversy. The potential for accidental damage is realized and steps have been taken to minimize both accidents and the probability of significant environmental damage occurring as a result of them.

Based on this evaluation, and the assumption that the continuing assessment of the proposed action will fail to bring to light any probable significant impact on the quality of the human environment or substantial environmentally-based controversy, it is determined that no environmental statement is required, and a finding of no significant impact is appropriate. However, the indicated actions to be taken to minimize the environmental impact of the exercise and the actions cited to mitigate any impacts that do occur are to continue to be pursued through the exercise period until damage repairs are completed.

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY
Memorandum

DATE: 13 Apr 1983

FROM: Environmental Engineer

TO: Facilities Officer

Via: Deputy Facilities Officer

SUBJ: PEA for Solid Shield '83; review of

Ref: (a) CINCLANT ltr 6280/FF16-6/N923 Ser405 dtd 7 Apr 83

1. We received the reference PEA Friday, 8 April @ 1500 hrs.

2. Enclosure (1) to the reference contains the PEA for overall exercise; Enclosure (2) contains PEA for AAFS Bulk Fuel exercise.

3. Overall, the document indicates that no significant environmental impacts will result and encourages coordination with MCB environmental personnel. However, several aspects of the PEA must be coordinated with U.S. Fish and Wildlife Service, National Marine Fisheries Service, and N.C. office of Coastal Zone Mgmt. We have no record of such coordinations.

4. A few errors are discovered in the PEA:

- RCW habitat is not considered "off-limits" to ~~tug~~training.
- Archaelogical resources @ TLZ Bluebird are not identified, etc.

5. MCB is "tasked" via the PEA to do the following mitigation measures:

a. Determine forest fire potential and provide a "fire fighting program geared to the exercise" (quote).

b. Provide waste disposal for collected sanitary, refuse, and field mess wastes.

c. ["wildlife management personnel must] define locations in alligator habitat" suitable for vehicle crossings of streams.

d. Ensure compliance with MCB Spill Prevention, Control, and Countermeasures (SPCC) Plan.

e. "Approve and coordinate" the designation of trails and other areas which will be used by tracked vehicles.

f. Provide sea turtle protection program, as needed.

g. Perform liaison with State of N.C. on air pollution permit for smoke generators as intermittent mobile sources, if any smoke is used @ CLNC.

h. "Repair, by grading and/or reseeding" areas disturbed by tracked vehicles - probably needed most at Onslow Beach.

i. "Base Commander will inspect the maneuver area and detain any troops necessary to properly police the area".

j. "Public Works activity" will receive reports of "damage to roads, pine plantings, drainage structures and other ... features".

6. I will provide information to you during and after the exercise as needed for the after exercise report. The above issues will require time spent by NREA, BMO, Fire Dept. (possibly) and myself on pursuing the above matters. Will proceed as you desire.

R. E. ALEXANDER
Environmental Engineer