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THE NATIONAL ENVIRONMENTAL POLICY ACT IN DoD:

Defending Our Environment's Future

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Executive Summary

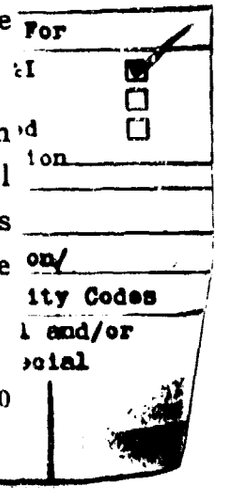
THE NATIONAL ENVIRONMENTAL POLICY ACT IN DoD:

Defending Our Environment's Future

Every day DoD makes decisions that affect the future of our environment. Early and more rigorous consideration of environmental consequences would save money by reducing costs to correct adverse environmental impacts, reducing environmental litigation, and avoiding program delays. It would also reduce unnecessary environmental damage and raise DoD's credibility with the public. DoD can implement this early environmental consideration by better compliance with the National Environmental Policy Act (NEPA). That act requires Federal agencies to make environmental assessments of each option available for their major decisions. Those assessments must begin in the early planning, must be well documented, and must lead to a finding that no significant environmental impact will occur or to an environmental impact statement. An environmental impact statement is a rigorous review of environmental consequences and is open to public debate.

Four categories of DoD decisions can affect the environment: defense acquisitions, basing, military construction, and operations. Each of these categories provides examples of how program delays and other costs could have been avoided if designs had been modified, different materials used, more suitable siting selected, different procedures followed, or similar factors that affect the environment considered. In many of the examples, the modifications would not have significantly affected the nonenvironmental goals of the decision makers. The defense acquisition program can comply with NEPA by enforcement and documentation at each formal review milestone. Some documentation already required for those reviews may be easily appended with information about environmental consequences.

For those basing decisions that result from weapons acquisitions, the decision makers can satisfy the NEPA requirements by adding to the environmental documentation initiated by the defense acquisition program. Other basing decisions support mission changes and reorganizations, and those decisions are initiated at the



Service or major command levels. For those, DoD must raise the NEPA awareness and educate many of the Services' key decision makers. The subject of NEPA should be introduced in the curricula of the appropriate Service schools and training courses. The DoD and Services should also increase accountability for NEPA compliance by including it on the agenda of inspectors general and among the rating criteria for performance reports.

Military construction, whether resulting from basing decisions or local capital replacement and improvement decisions, is a good example of a documented environmental consideration. However, the military construction stage of a program often takes place too late to protect the environment from decisions made in earlier stages. The DoD must dispel the belief among many of its decision makers that the NEPA is merely a military construction issue and does not need consideration in the early stages of acquisition, basing, or operations decisions.

Operations decisions cover actions from training and exercises to land and airspace management. Decisions in this category are the most decentralized ones and are often made at the installation level. Unlike the defense acquisition and military construction processes, operations decisions are made without high level, central review boards. In order to ensure that operations decisions include NEPA requirements, DoD will have to rely heavily on increasing environmental education and awareness at the Service, major command, and installation levels. The needed changes may be encouraged through the school and training curricula mentioned above and through policy letters from the senior DoD leadership that leave no doubt about the DoD's commitment to enforcing NEPA.

We recommend that the Deputy Assistant Secretary of Defense (Environment) [DASD(E)] and the Service Secretaries take the following additional steps that apply to all four categories of DoD decision making.

- DASD(E) should review DoD and Service instructions, directives, regulations, and pamphlets that influence decision making to identify those publications that fail to mention or emphasize the need for environmental consideration. DASD(E) should recommend that the proponents of those publications amend them to emphasize the need for environmental awareness and to include procedures for NEPA compliance.

- The Services should take full advantage of "tiering" – a series of progressively more detailed environmental documentation. Some major decisions are made in stages such as the acquisition, basing, housing, and operation of

new weapon systems. The implementing instructions of NEPA allow the environmental documentation to be tiered during such processes. Tiering offers many economies and other advantages.

- The DoD should formalize an additional document to those required by the NEPA. This new document should be used by the decision maker to record the plan and milestones for environmental reviews during the decision-making process. It should also be used to record the environmental considerations during the initial tiers of some decision making with the stipulation that if the idea moves beyond the concept stage, the decision maker must prepare the documentation required by NEPA. Since many ideas do not go beyond the concept stage, the new DoD document would save the time and expense of preparing them while ensuring that NEPA documentation is produced for those ideas that do.

- The DoD and Services should use the Planning, Programming and Budgeting System (PPBS) as an environmental quality control check in major decisions with the realization many of the initial decisions have been made by the time a decision maker asks for funding. Additional staffing would be needed to implement that quality control check.

- Staff at key DoD, Service, and major command decision-making functions should be given more responsibility for NEPA implementation. The DoD NEPA staff should become more involved in the environmental review of Service decisions. At the Service and major command levels, staff members familiar with the NEPA should be available to review and document major decisions from the earliest stages on. This recommendation, together with some of the others in this report, will require the DoD and Services to review the number of staff positions dedicated to the NEPA requirements.

- The DoD should encourage more communication and coordination among Service personnel responsible for NEPA documentation. Quarterly meetings, annual symposiums, and a newsletter are means to enable such persons to share solutions to common problems and expand their expertise.

- The DoD should not expend resources on creating and maintaining a database of information for those who prepare the documentation required by NEPA. That documentation is usually site-specific and the benefit of generic database information would be minimal. Moreover, much of this generic environmental information is easily and economically obtainable through commercial sources.

These recommendations will help DoD consider and document as early as possible the potential environmental consequences of its decisions. By doing so, it will avoid many of the high costs and program delays being caused by environmental

litigation. Early consideration will also help DoD avoid unnecessary impacts on our environment and maintain DoD in high public esteem.

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CHAPTER 1

BACKGROUND

Over the past 3 decades, the attitude of the American public toward Earth's environment has changed from one of virtual indifference to recognition that protection of the environment is a paramount national and international issue. The Department of Defense shares that recognition. The nation's approaches to resolving environmental problems can be grouped into three categories: (1) clean up past environmental contamination,[1] (2) improve current environmental constraints, and (3) develop plans to avoid future or potential environmental impacts.

The Department of Defense is thoroughly involved in resolving problems in all three categories. It uses the Defense Environmental Restoration Program (DERP) as the vehicle for cleaning up past environmental contamination; to ensure that its actions are consistent with nationwide efforts to constrain current polluting activities, it complies with Federal, state, and local environmental regulations; and its approach to the third category – the need to plan for minimizing future environmental impacts as legislated by the National Environmental Policy Act (NEPA) of 1969 – is addressed in this report.

In a number of cases in the past, compliance with NEPA could have helped DoD avoid difficult situations that added great expense and caused delays in Defense programs. In Appendix A, we describe several such cases; here, we cite three as examples.

- *Dugway Proving Ground, Utah* – Federal courts issued a permanent injunction prohibiting planned construction of an Army biological warfare laboratory after a suit charged the Army with failure to adequately plan for the environmental impact. Attorneys at the Department of Justice believe the project could have been successful had proper NEPA documentation been prepared by the Army with early public involvement.
- *Naval Weapons Station, Earle, New Jersey* – The Federal court enjoined the Navy from completing construction of a 250-unit family housing project

[1]Mandated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and the Superfund Amendments and Reauthorization Act (SARA) of 1986.

because the Navy failed to incorporate a wetlands restriction in its construction contract. The real, but hidden, community concern was the impact of the project on its school system. (That concern was eliminated as a result of a contract error.) The Navy was allowed to proceed only after agreement to construct replacement wetlands at considerable expense and a 2-year delay. Careful contract review could have prevented this problem.

- *F-16 Beddown, Homestead Air Force Base, Florida* – Restrictions on low-level flights over the Everglades reduced the capability of Homestead Air Force Base to meet its training mission for the newly assigned F-16 aircraft. The predecessor F-4 aircraft did not require the low-level flight pattern over an extended area. Early planning for basing of the aircraft could have led to more suitable alternatives.

Neither cleaning up past contamination nor curtailing current activities comes cheap. DoD estimates that billions will be spent restoring contaminated sites and billions more reducing the pollutants being emitted from sewage treatment plants, power plants, and other industrial processes. Furthermore, we can find no evidence to suggest that the high price of compliance with these laws will deter their aggressive enforcement. Under NEPA, however, the Government has a mandate to avoid future environmental impacts and an opportunity to reduce its costs to comply with environmental requirements. This report recommends actions the Department of Defense can take now to incorporate NEPA into today's decisions and avoid downstream environmental problems.

THE NATIONAL ENVIRONMENTAL POLICY ACT

The NEPA legislation was enacted in 1969 to

> . . . encourage productive and enjoyable harmony between man and his environment; to promote efforts that will prevent or eliminate damage to the environment or biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the nation; and to establish a Council on Environmental Quality.[2]

[2]The National Environmental Policy Act of 1969, as amended.

Under NEPA, the Federal Government is responsible for improving and coordinating plans, functions, programs, and resources to ensure that:

- Each generation assumes responsibility for protecting the environment for future generations
- Future generations have safe, healthful, productive, and aesthetically and culturally pleasing surroundings
- The widest beneficial use can be made of our surroundings without degradation, risk of health or safety, or other undesirable or unintended consequences
- Important historic, cultural, and natural aspects of our national heritage, diversity, and freedom of choice are preserved
- The balance struck between population and resources opens the way to high standards of living for everyone
- The quality of renewable resources is enhanced and recycling is encouraged.

Although NEPA is directed at Federal agencies, it affects broad segments of society. National parks and forests are subject to the act; activities focused on the continental shelf and marine fisheries are covered; and wetlands and other environmentally sensitive areas are included.

COUNCIL ON ENVIRONMENTAL QUALITY IMPLEMENTING REGULATIONS

The Council on Environmental Quality (CEQ) has published regulations for implementing the procedural provisions of NEPA.[3] The following are some key provisions:

- Ensure that environmental information is available to the public before making decisions or taking action
- Keep the information given to the public relevant and accurate
- Incorporate NEPA requirements early in the decision making, concurrently with other planning and review procedures; avoid incorporating NEPA provisions after all other planning

[3] *CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, 43 Federal Regulation 55978 (1978).

- Use NEPA to identify alternatives that will minimize the effect that an action will have on the environment
- Take positive actions to restore and enhance the quality of the environment.

One of the most visible results of implementing NEPA is a series of documents prepared by Government agencies. Under NEPA, an environmental assessment (EA) must be performed for any planned DoD action that might have environmental consequences. The EA leads to one of two conclusions: either a finding of no significant impact (FONSI) or that further study, i.e., an environmental impact statement (EIS), is required. Documentation on FONSIs should be made available to the community. If further study is required, public meetings are mandated to determine the scope of the study, to acquaint the community with DoD's plans, and to seek input that will enhance the decision-making process. A draft EIS is then prepared and circulated to a wide audience, including community officials, regulatory agencies, senior commands, and the Environmental Protection Agency (EPA). Based on comments received on the draft EIS and numerous technical, economic, and mission requirement factors, DoD reaches a decision and prepares and submits a final EIS to EPA. Once the EIS is filed, a record of decision (ROD) is prepared by DoD. In Appendix B, we present abstracts of EISs filed by DoD in 1987 and 1988.[4] Those abstracts show the range of EISs covered by NEPA.

A major result of this process is providing the decision maker with sufficient environmental information upon which to base an informed decision. NEPA does not require that the decision maker select the alternative that results in least impact upon the environment; it does require that the decision maker consider the environmental consequences, together with other factors, in the decision process.

A number of NEPA requirements offer positive benefits in the decision process. If, at the earliest stages of program planning, a decision maker considers the potential environmental impacts a program may generate, chances are good that the impact will be avoided or minimized during the program implementation. Considering the environmental impact in the early planning phase also allows the agency to consider "mitigation," or actions by which it can offset the environmental impact by some other means.

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[4] *EIS Cumulative 1987* and *EIS Cumulative 1988*, published by Cambridge Scientific Abstracts, Bethesda, Md., 1988 and 1989, respectively.

The CEQ regulations encourage the use of the "tiering" process, whereby broad statements of program content and general plans are outlined and presented to the public in meetings held to establish the scope of the EIS prior to development of site-specific plans. We use the term "programmatic EIS" to describe these broad statements. The impacts of specific siting alternatives, for example, may not be identified at this stage, but a forum for public understanding and dialogue is created. Subsequent EISs containing site-specific details of the program are then tiered from the initial programmatic EIS. The tiering concept eliminates the requirement to restate the broader aspects of the program for each site-specific EIS. It should also help sharpen the focus of subsequent scoping meetings. Programmatic EISs help the decision maker examine a range of alternatives before expensive, and sometimes irreversible, decisions are rendered.

Of course, all this activity aims at reaching decisions that will minimize the environmental consequences of some DoD action.

CHAPTER 2

DEFENSE DECISION MAKING

Every day DoD makes decisions that affect the future of our environment. Those decisions range from the simple act of mandating the collection of aluminum cans in the office to the complex choice of performance characteristics for a new generation of aircraft. The NEPA is focused on the latter. Complex and far-reaching decisions with environmental consequences that may be difficult to assess highlighted the need for this milestone legislation. Congress desires that in choosing between alternatives agencies be aware of the environmental impacts of their actions and attempt to quantify them before making final decisions.

DECISION CATEGORIES

In DoD, decisions are made at all levels from the headquarters commands to the individual installations and they cover a wide range of activities. Weapons acquisition can affect the environment if hazardous materials or low-level flight characteristics are specified for the weapons. The follow-on decisions for testing, training, basing, and the required construction can also affect the environment. Force realignments can lead to the closing of bases, relocation of units, and construction and demolition projects, all of which have the potential to adversely affect the land and communities of the impacted installations. Military construction (MILCON) – the more common type of impact associated with environmental protection – often stems from decisions made during major program planning years before construction begins. Day-to-day field-level operations, such as training and exercises, can wreak havoc on the environment if planning has ignored their potential consequences.

We examined the range of decisions and the effects of those decisions and found that defense decisions could conveniently be grouped into four categories:

- Defense acquisition program decisions
- Basing decisions

- Military construction decisions
- Operational decisions.

The following subsections describe these categories in further detail.

Defense Acquisition Program Decisions

Major DoD acquisitions are governed by a formal decision process whereby decisions are rendered at six different milestones.[1] At each milestone, decisions must be reached before the program can proceed to the next phase of development, production, or employment. The milestones are as follows:

- *Milestone 0 – Program Initiation/Mission Needs Decision.* After the requirement for a new or replacement program is examined, permission is granted to proceed with concept exploration/definition. Affordability and life-cycle costs are reviewed prior to Milestone 0. Performance characteristics, employment schemes, and testing requirements, while not yet well defined, are considered as part of this decision.

- *Milestone I – Concept Demonstration/Validation Decision.* In the process of demonstrating and validating the concept, alternatives and their tradeoffs are examined in greater detail. Performance cost, the use of new systems versus adapting existing ones, acquisition strategy, and a wide range of other issues are considered in the process leading to Milestone I. Basing of the system and its operating characteristics should become more clearly defined by concept demonstration and validation.

- *Milestone II – Full-Scale Development Decision.* The decision at this milestone approves limited production of selected components to verify production and testing. In the process leading to Milestone II, affordability versus military value is again verified, transition from development to production and integrated logistics support (ILS) is planned, and risks are assessed. Specific testing sites and ranges and installations for basing the system are identified and design has begun on a MILCON program for its support.

- *Milestone III – Full-Rate Production Decision.* At this milestone, approval is received to proceed with the production and deployment phase or construction of the system. The approval is based on results of tests, cost analysis, threat validation, affordability, life-cycle costs, and other key issues. Construction projects are completed and ready to support the new system.

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[1] DoD Instruction (DoDI) 5000.2, *Defense Acquisition Program Procedures*, 1 September 1987.

- *Milestone IV – Logistics Readiness and Support Review.* This milestone occurs a year or two after deployment, and its purpose is to verify that readiness and support objectives are achieved. ILS plans, readiness and sustainability objectives, affordability, and life-cycle costs are reviewed in the process leading to Milestone IV.

- *Milestone V – Major Upgrade or System Replacement Decision.* This decision normally occurs 5 to 10 years after initial deployment to determine the system's state of operational effectiveness, suitability, or readiness. The threat environment and technology are among the factors reviewed to determine whether the system requires upgrade or replacement. Support issues including ILS also affect the decision.

As systems or programs reach these major milestones, a major investment in dollars is about to be committed and careful review is essential before proceeding further. After Milestones I or II, a program is rarely canceled since its need has already been verified. The basic questions of cost, risk, and performance absorb the attention of the decision makers. Environmental impacts deserve a place in the risk analysis process.

Integrated Logistics Support

DoD's acquisition policy is to ensure that resources needed for readiness receive the same emphasis as those required for performance and for meeting schedule objectives.[2] Readiness resources include those needed to design required support characteristics into systems and equipment and those needed to plan, develop, acquire, and evaluate that support. The primary objective of the ILS program is to meet system readiness objectives at an affordable life-cycle cost. The ILS program accompanies the system from inception until termination.

Proper ILS plans are initiated during concept exploration and are based on system operational and maintenance concepts, readiness objectives, and affordability constraints. They also consider alternative strategies and risks in meeting the objectives. ILS development must be a continuous link in the decision process as the system passes through its milestones. Range selection, basing, facility requirements, and military construction programs are included in the ILS plans. Any one of the ILS

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[2]DoD Directive (DoDD) 5000.39, *Acquisition and Management of Integrated Logistics Support for Systems and Equipment*, 17 November 1983.

alternatives selected can impose an environmental impact, and thus, NEPA must be a part of the decision process during the early planning phases of ILS.

Acquisition Organizations

Decisions in the Military Services and Defense agencies are made by committee, board, and council chairpersons and those in command, staff, and secretariat positions. Probably the most qualified watchdogs for NEPA issues are the acquisition project manager or the program manager (PM) and the ILS managers. Decisions at their levels must incorporate the principles of NEPA if they are to be incorporated at all in the acquisition process.

Organizations for acquiring major systems are prescribed by DoDD 5000.1, *Environmental Effects in the United States of DoD Actions*. The Defense Acquisition Board (DAB), chaired by the Under Secretary of Defense (Acquisition), is the senior advisory body in DoD on acquisition matters. Service acquisition executives (SAEs), the vice chairman of the Joint Chiefs of Staff, and senior Defense Secretariat members who serve on that board advise the Secretary of Defense, the Deputy Secretary of Defense, or the Chairman on all acquisition decisions. The DAB reviews each major system and recommends whether to proceed to the next milestone or whether more information is required.

The Services assign the position of SAE to either an Under Secretary or Assistant Secretary who appoints a program executive officer (PEO) and approves a PM for each Service acquisition program. The PEOs generally oversee more than one program, but the PMs are focused on single acquisitions and become the most knowledgeable people of all details of specific programs. The PM guides the planning process, develops cost information, and champions the program through each decision milestone. Responsible for all support elements of the program, the PM relies on the ILS manager to plan for and develop all support requirements. Together the PM and ILS manager can determine how to integrate NEPA into the acquisition process.

As in many other Defense areas, the organizations for managing acquisitions within each Service vary considerably. A brief summary of the major organization elements follows:

- Army acquisition is managed primarily within the 10 major subordinate commands and their field commands comprising the Army Materiel Command (AMC) in Alexandria, Va. An AMC major subordinate command, the Army Tank and Automotive Command (TACOM) in Warren, Mich., for example, procures tanks and heavy military vehicles for all Services.
- Three of the Navy's five systems commands in Arlington, Va., oversee major acquisitions for the Navy and Marine Corps.
  - Naval Air Systems Command (NAVAIR)
  - Naval Sea Systems Command (NAVSEA)
  - Space and Naval Warfare Systems Command (SPAWAR).

  The Navy Special Projects Office also has acquisition authority for procuring all submarine ballistic missile systems.
- Air Force systems are acquired by the 12 divisions and centers comprising the Air Force Systems Command (AFSC), with headquarters at Andrews Air Force Base, Md. The Ballistic Systems Division at Norton Air Force Base, San Bernardino, Cal., is one of the AFSC divisions and manages acquisition of the Strategic Missile Program, better known as MX.
- The U.S. Marine Corps (USMC) receives acquisition support for its major systems through the Navy Systems Commands, but special requirements are acquired by USMC PMs through the Marine Corps Research and Development Command (MCRDC), Quantico, Va.
- Some acquisition programs requiring significant inter-Service coordination are managed outside the individual Services by special joint program offices created for the life of the project. The Strategic Defense Initiative (SDI) is one example of a joint program.
- Service PEOs are generally assigned from within the major procurement commands and oversee programs of a similar nature. Program managers are assigned from within the parent Service and usually remain with the program for extended periods of time, which are typically longer than the normal 3- to 4-year tour of duty for officers.

Basing Decisions

Decisions leading to the assignment of units, equipment, and people to bases and installations are usually structured but at times can be quite unstructured and

can originate for a variety of reasons. Major force realignments, such as those anticipated from force reductions in Europe, generate changes that affect many installations and their surrounding communities. Such realignments are often difficult to anticipate since DoD may not control their occurrence. Available land, facilities, and other support capabilities often determine which installations are to become factors in the decision process. Although the initial decision to realign forces may be made at higher Government levels, the Service staffs and major commands become the principal decision makers in ironing out details of locations and base loading. Data on the impact that realignment will impose upon an installation are often sketchy unless good planning information is available for the installation. The installation's master plan should be the source of data for initial planning for most installation impacts.

Acquisition PMs indicate that they become deeply involved with system technical issues (performance, design, development, and production) during the early phases of procurement and tend to ignore support issues, such as basing. They do so because the costs of the technical issues are greater and will receive most of the attention during milestone reviews. However, successful compliance with NEPA requires that environmental impacts be considered early. Since acquisition programs can result in the relocation of units, construction of new bases, and in some cases, closing others, NEPA will be ineffective if ignored early in the program's life cycle.

Decisions to reassign units and equipment not related to systems acquisition can also result in environmental impacts if the reassignments are not properly planned. The availability of land, harbors, air space, storage, training, and other facilities plays a major role in basing decisions. Since such decisions often occur at a major command or even at the installation level, they are difficult to monitor at an early planning stage.

Military Construction Decisions

Military construction projects require considerable time from inception until completion. Typically, the project is first identified as a deficiency at an existing installation that must be resolved by either replacing or modernizing an older facility or a deficiency created by the need to meet newly assigned missions. The projects are usually listed in the installation's capital improvements program and compete for

funds in the Five Year Defense Program (FYDP). Once successful in the resource process, projects must be submitted to Congress with 35 percent of their design complete to ensure that an accurate estimate of project cost and scope is available. Following receipt of funds, construction can require from 18 to 24 months or longer to complete.

Since the MILCON process is so long, its planning must be started very early if facilities are to be ready to support new missions. If the project has been properly sited within the constraints of the installation's master plan, environmental issues should be minimized. Trouble occurs, however, when unforeseen problems such as soil contamination are discovered later. Fortunately, one constraint unique to the MILCON program is the requirement for installation staff to prepare EAs for all projects before they apply for funding. Major commands must ensure that environmental issues related to the construction have been addressed and resolved before the project can be submitted to headquarters staffs.

Real estate is acquired within the MILCON program. The Services must be sure that they subject proposed real estate to the same kind of environmental scrutiny that construction projects receive. The Services must take care that the Government does not inherit environmental issues with land it acquires. Major demolition projects can also be funded under the MILCON program, and they present unique environmental risks, particularly if material such as asbestos or any other hazardous material is released during the demolition process. The impact of each of those materials must also be considered within NEPA's parameters.

Operational Decisions

The Services are faced with many operational decisions, which are typically made at the local or major command levels. Those decisions entail choices in, for example, training exercises; restoration of sites for reuse; and outlease of lands for forestry, mining, and agricultural use. The examples cited illustrate the diversity of decisions that must be made under this category. Although we will not attempt to categorize them further, we need to highlight some of their characteristics.

Operational decisions are made on activities that may be funded from local operating and maintenance (O&M) accounts that require no specific line-item descriptions in the annual budget requests, thus the visibility of such actions is kept at the installation level. For that reason, DoD has difficulty imposing controls to

ensure compliance with the provisions of NEPA in operational decisions since decision making is decentralized. Although most such operational decisions tend to result in smaller environmental impacts, NEPA requirements must nevertheless be met.

Major Joint exercises are an anomaly to the typical decisions we include in the operational decision category. Field training exercises, such as Solid Shield and Ocean Venture, each require a letter of instruction (LOI) that contains an enclosure devoted to environmental protection. The LOI is classified prior to the date of the exercise but appears to include the basic requirements for considering environmental consequences that could result from the exercise.

THE PLANNING, PROGRAMMING AND BUDGETING SYSTEM

Implementation of most Defense decisions requires resources in the form of funds and force level and manpower authorizations. The system for determining resource requirements and seeking them from Congress is the DoD Planning, Programming and Budgeting System (PPBS), a complex system reaching all levels of DoD. PPBS decisions are often the most difficult for they affect the life and death of programs and organizations. (Appendix C presents a brief description of the PPBS.)

Decisions involving large funding levels – acquisitions of major systems and MILCON projects, for example – are usually visible throughout each phase of PPBS. System acquisition decisions are generally independent of the PPBS cycle. In theory, after a major system successfully passes through an acquisition milestone, it must still compete for funds in the PPBS. As a practical matter, however, successful passage through a milestone usually implies resource approval during PPBS.

Some decisions made at the major command or installation level may not be specifically identified in the PPBS or may be visible in documents retained only at the major command level. For example, a major command could prepare a plan for conducting annual training exercises at specified locations, which could have an impact on the environment. Resources to support this plan could be rolled up into a single funding element titled "Training," and no one above the major command levels would be aware of the exercises. Within the PPBS, it is difficult for headquarters organizations to review such planning decisions for NEPA compliance.

The PPBS process cannot easily be used to ensure compliance with NEPA. The PPBS is designed to facilitate choices between competing program and budget alternatives. Its objective is to maximize Defense capability within constrained resources. NEPA is most effective when alternatives are examined far earlier in the program development and design decision-making process. Consider the following:

- Many crucial decisions about a program are made before documentation on the program enters the PPBS.
- The summary level of detail in the documentation is insufficient to determine how the proposed action could affect the environment. Criteria applied during the early planning phases will not be evident in the documentation supporting the proposal.
- Focus will inherently fall on the system's requirement and affordability. The elements of ILS, including environmental impacts, are almost always subordinate to primary system elements.
- Commitments are significant for the primary system; conversely, support issues are viewed as "solvable," even if they have not been fully examined. The withholding of funds at this stage because of an ILS issue is unusual. Major alternatives during PPBS reviews would be considered only under the most extraordinary circumstances. Rather, the usual reaction to a latent environmental issue would be to prepare reams of documentation to support a finding of no significant impact, a FONSI.
- Councils, boards, or committees who review and pass judgment on the merits of competing programs would have to rely on personal knowledge of each program or project to judge whether NEPA has been considered.

Since the PPBS is a highly structured process with intensive reviews, procedural guidance for the process and the reviews do provide opportunities to assess how well Defense Components comply with NEPA.

CHAPTER 3

NEPA IN DoD DECISION MAKING

The broad objective of the National Environmental Policy Act is to encourage productive harmony between man and his environment. NEPA reiterates the five key implementing requirements established by CEQ: planned actions must be openly discussed with the public before decisions are made or actions taken; the information presented must be accurate, relevant, concise, and clear; NEPA must be incorporated into the planning process and proposal reviews; alternatives (if any) that can minimize environmental impacts must be identified; and positive actions must be initiated to minimize environmental impact.

The law does not require DoD to select the alternative that imposes the least environmental impact although many DoD decision makers believe it does. It requires only that DoD identify and consider such alternatives. Nonenvironmental factors such as economic or technical conditions could be overriding, and DoD could select an alternative that would result in more adverse environmental consequences. Early planning will help minimize those impacts and in some cases, highlight mitigation alternatives.

For the first 10 years as a law, NEPA's procedures often met with apathy, ignorance, and even defiance. Defense activities were little different than other agencies, each trying to bring programs forward under tight deadlines within budget constraints. The early uncertainty of NEPA's required procedures encouraged many decision makers to take risks with NEPA. They believed their programs could sidestep this law and avoid the inevitable delays from conducting detailed impact studies and the high cost of those studies. During the 1980s, decision makers began to realize that the law has teeth in the form of court injunctions and failure to comply with NEPA was becoming unacceptable. Citizen suits and court actions against the Government for not fully complying with NEPA have gained much attention as the public awareness of environmental problems has increased. Attitudes are slowly turning around. Some enlightened DoD decision makers, from installation commanders to project managers, are seeking out more information on NEPA. They are beginning to understand that NEPA requirements are real and that compliance

is not only required but can result in sound business and mission decisions. However, more NEPA education and awareness are needed to continue this trend. A structural impediment also remains: NEPA is not fully integrated into many of the decision-making processes.

PLANNING WITH NEPA

When NEPA requirements are not observed early in the planning stages of Defense programs, decision makers are often forced to "back in" to NEPA compliance. They must prepare documentation and administrative records to justify decisions already made. More often, they conduct extensive studies that describe in unnecessary detail the consequences their project will have on the environment. When this effort occurs after decisions have been reached, then program and resource commitments become irreversible and the program cannot realize the optimal gains possible from NEPA compliance. In fact, some of the decisions reached may result in adverse environmental consequences that could have been avoided with earlier consideration in the planning process.

The concept of "tiering," as provided for in the CEQ regulations,[1] refers to the coverage of general program features and considerations in broad EISs (often referred to as "programmatic EISs") from which more detailed statements can later be prepared. Generally, programmatic EISs are prepared during the earliest stages of program development; a few years may lapse before specific sites are selected. Subsequent detailed impact statements are prepared for the various site-specific actions and need not incorporate the broader aspects of the overall program, except by reference.

A decision maker might choose to ignore the tiering approach for a number of reasons. To the uninformed, tiering represents just one more constraint and the benefits to the decision maker appear doubtful. Why conduct more scoping meetings, or prepare additional documents that seem to add no information that cannot be obtained during the site-specific EIS? Furthermore, early EISs add cost and time and impacts are difficult to predict early in the planning process. When the focus of the decision maker is on system design and development, why share plans with the

[1]Section 1502.20, *CEQ Regulations for Implementing the Procedural Provisions of NEPA*, (Reprinted) 40 CFR Parts 1500 to 1508 as of 1 July 1986.

public when the precise support items have not been defined? Most decision makers do not have staffs necessary to develop minimum NEPA requirements.

The advantage to tiering from broad programmatic assessments and statements is that it encourages NEPA compliance early in the decision process before the detailed impacts of each subsequent action are known. Scoping meetings held with the public on broad programmatic EISs allow a period for comment and building of public awareness of the program so that the public will become better informed. Subsequent scoping meetings can then focus more effectively on specific issues rather than on the merits or weaknesses of the entire program. Tiering is a mechanism that permits major programs such as weapon systems or construction of new bases to comply with NEPA early in the planning process. Although NEPA tiering has rarely been used in Defense decision making, its fundamental concept is sound. Its use will encourage DoD personnel to view NEPA as an effective and early decision-making input.

Figure 3-1 illustrates the tiering concept for Defense decision making.

NEPA IN DEFENSE AND SERVICE DIRECTIVES

To ensure that NEPA is understood by as many decision makers as possible, the numerous directives that govern the processes by which Defense decisions are reached should reference it. We have reviewed an extensive number of directives, published by both OSD and the Services. Detailed results of our findings are described in Appendix D.

As might be expected, the acquisition process is rigidly defined, both in the Defense 5000 series directives and the Service implementing directives. MILCON projects, which must adhere to a structured procedure before they are submitted to Congress, are also governed by detailed procedures. Guidance on basing decisions and operational decisions is far less structured, which is not unexpected since most of those decisions are more decentralized and occur at more random intervals.

We found many areas in which the directives could require or encourage NEPA implementation. Army directives appear to incorporate NEPA requirements better than do those of the other Services and OSD. The Navy's key directive implementing NEPA is being revised, but its publication should provide for improved NEPA procedures.

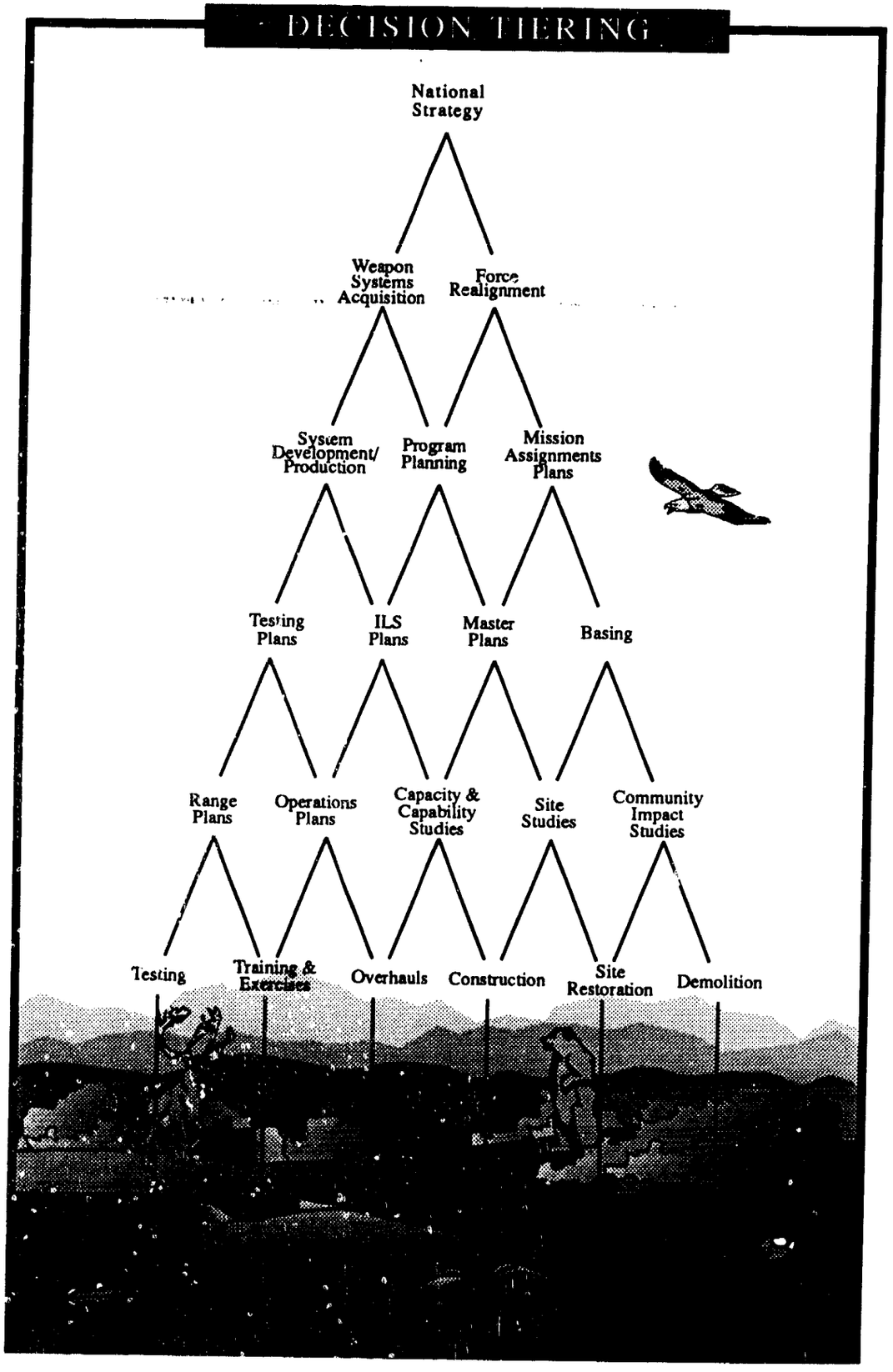

FIG. 3-1. DECISION TIERING

AWARENESS AND ATTITUDES OF DECISION MAKERS

DoD personnel, particularly those at the installation level, are becoming more sensitive to environmental issues. The ability of regulatory agencies to shut down operations if permits are violated serves as an important attention getter. Threats of civil and criminal suits have had a role in developing a portion of this sensitivity. Installations with effective community relations programs seem to have a heightened awareness of environmental responsibility. These incentives notwithstanding, the typical installation commander seems to be keenly aware of the responsibility to protect the environment at the installation. Such commanders are generally aware of NEPA and the benefits of building public trust with neighboring communities. They also recognize that failure to conduct proper planning could result in future adverse action.

Awareness appears to diminish as the headquarters level increase. Many staff members in higher level headquarters have not experienced the frustration of delays while courts decide whether to issue an injunction to halt progress on a program, nor have they observed the ire of concerned citizens when new programs affect the calm of their nearby communities. As one headquarters' staff member exclaimed, "The only environmental issue I am concerned about is the corrosive effect it will have on my weapon!" Views such as that highlight the need to increase NEPA awareness. A common bias among decision makers is that NEPA applies mainly to MILCON decisions. That bias may arise because NEPA oversights in a program are often not addressed until the MILCON stage.

THE ROLE OF INSPECTORS GENERAL IN NEPA ENFORCEMENT

With the exception of the Navy, the DoD and Service inspectors general (IGs) have not been inspecting installations specifically for NEPA compliance. (Recent Navy IG inspections have uncovered instances of poor NEPA compliance.) Environmental issues in general, however, are getting more attention. The DoD IG team has established a group of environmental inspectors, and they have been inspecting hazardous waste management and management and funds accountability of the Defense Environmental Restoration Program (DERP). The environmental group expressed an interest in adding NEPA to its inspection agenda. The Army and Navy IG teams have conducted special inspections of hazardous waste disposal. The Navy is also establishing a special environmental group to augment its IG team.

The IGs could inspect NEPA compliance under any of three programs. The first program is the periodic compliance inspection of every installation. Under that program, the IG team inspects the installation according to an inspection checklist. An IG could make NEPA an item on that checklist. The Army, however, no longer performs these compliance inspections. For the Navy and the Air Force, those inspections are usually performed by major command IGs who decide what items are included on their checklists. The second program is the list of special interest items (SIIs) that each Service publishes. SIIs are items recommended for inspection because of their current importance or because they may have problems. Any Service headquarters may suggest SIIs. In the Navy, major command IGs must incorporate those SIIs, but in the Army and Air Force, the SIIs are more suggestive than directive. In all Services, the major commands may publish their own SII lists. The third program is the special inspection. The DoD and Service IGs may inspect some installations, headquarters, or staff functions to confirm that a problem exists in a particular area and to help solve it. The inspections of hazardous waste disposal mentioned above are examples of this type of inspection. The DoD and Service IGs could make NEPA compliance the subject of one of those series of inspections.

NEPA COMPLIANCE AND OFFICER EFFECTIVENESS REPORTS

Rating officials rarely include NEPA compliance as a criterion on which to base an officer's effectiveness report, and none of the Services has specific guidance to include it. The Services could use one of two methods to include NEPA compliance as a rating criterion: they could include compliance with NEPA in the formal definition of rated areas or they could add NEPA compliance to the list of SIIs used as guidance to the raters. The Navy and the Air Force have defined what a rater must consider in each of the areas he or she must rate. For example, the Air Force rates its officers in the areas of judgment and management ability. If compliance with NEPA were included in the formal definition of those areas, raters would be required to consider that aspect when marking the rating blocks for those areas. Alternatively, the Services could include NEPA compliance in performance ratings by adding it to a list of SIIs that is maintained to give guidance to raters. For example, the Army has such a standing list of 10 to 12 SIIs that includes such items as safety, security, and natural resources management. The Army would need to modify the natural resources management SII only slightly to include NEPA, perhaps renaming it the "environment and natural resources management" SII and expanding its definition.

STUDIES AND STAFFING

In recent years the Department of Defense has filed fewer than 25 EISs annually with the Environmental Protection Agency (EPA) (excluding any classified EISs). Considering the wide range of Defense activities, that number appears to be low. In this section, we review the methods Defense agencies use to prepare studies and the OSD professional staffs that oversee the NEPA implementation process. Appendix B, the abstracts of Defense 1987 and 1988 EISs prepared by the Cambridge Information Group, is suggested as reference.

DoD Environmental Assessments and Environmental Impact Statements

In 1987, 17 new Defense EISs were filed with the EPA. An additional 6 statements were filed by other agencies that describe Defense-related actions. In 1988, the comparable EIS numbers were 13 and 1. Discussions with headquarters environmental staff members revealed that many more EISs were generated in 1989 and are being prepared in 1990. We believe a fully functioning NEPA program in DoD should result in 50 to 100 EISs per year and a considerably greater number during periods of numerous base closures.

One major factor that probably suppresses the number of NEPA EISs is their cost and the lengthy time needed to prepare them. The high cost reflects the extreme level of detail generated for most studies. Department of Justice lawyers believe that a NEPA study cannot have too much detail. They believe that the more data, the greater the Government's chances of winning when suits are filed. Under that philosophy, paying for NEPA studies "by the pound" would seem to have some merit. The CEQ implementing regulations, on the other hand, stress the need for relevance and conciseness in preparing NEPA studies. Part of CEQ's aim is to make the documentation more readable and more usable in decision making. Another, and probably more important, CEQ aim is to reduce the high cost of preparing documents. Moreover, the main objective is not to win lawsuits but to eliminate the grounds for them.

Environmental assessments are another matter. They are typically filed at the installation level although for highly visible projects they may be forwarded to major commands or higher levels for review. Where documentation on MILCON projects is forwarded to the major commands with attached facilities studies, the forwarding agent must certify that an EA has been completed. Thousands of EAs are probably

prepared within DoD each year even though an accurate count is not possible in view of the decentralized way in which they are prepared. EAs lead to one of two possible conclusions: (1) a significant impact is possible and further study resulting in an EIS is required or (2) no impact is expected and a FONSI is issued. Since so few EISs are prepared, we can draw the obvious conclusion that nearly all EAs result in FONSIs.

Environmental assessments that result in a FONSI should not be construed as an attempt to ignore NEPA compliance. Mitigation plans and actions are often initiated as a result of the environmental planning process. Many FONSIs would not be possible were it not for extensive adjustments made to reduce environmental impacts below the level of "significance" to offset them through mitigation. Decisions to reroute a proposed road around a sensitive habitat or relocate a building site can be reached fairly easily if the route or the site is considered early in the planning process. Constructing replacement wetlands, on the other hand, can become a far more complex decision. In either case, the result could be issuance of a FONSI.

The NEPA Staffs

In very few DoD organizations did we find enough professional staff members trained and fully employed in managing the DoD NEPA program. Most full-time NEPA professionals are located in higher level headquarters organizations. Table 3-1 displays the staffing levels at the OSD and Service headquarters staffs.

TABLE 3-1

NEPA STAFFING AT HEADQUARTERS

Component	Full-time HQ NEPA staff
OSD	1
Army	1
Navy	2
Air Force	4
Marine Corps	0
Defense Logistics Agency	0

We found no office that would claim its capability was adequate to fully comply with minimum NEPA requirements. A staff lawyer for the SDI estimates it will

require a staff of 20 NEPA employees to manage the next phase of EISs and scoping meetings planned for this highly visible joint program. If SDI is able to acquire contractor help and support from the Services, the staff size can be reduced to 10. Either level is considerably greater than the one person currently assigned to the NEPA effort.

An Air Force counsel estimated that if the Air Force had "a few hundred" additional NEPA professionals, it could effectively comply with NEPA and save many dollars. Headquarters, Air Force proposes to increase its NEPA staff from 4 to 23 and is encouraging the major commands to match that increase.

The general assessment of key DoD NEPA staff members confirmed that most NEPA-related effort is conducted by contract; they believe in-house DoD staffs could do much of the work more effectively and at considerably lower costs. They also confirmed that earlier participation by the PM staffs would result in a significant improvement in NEPA compliance.

Field-level organizations usually assign NEPA functions to facilities planning groups that perform the master planning, manage natural resources, or monitor environmental compliance. Moreover, few designated NEPA personnel at field activities spend full time on NEPA matters. Few installations can afford to have a dedicated NEPA staff since few in-depth studies are performed. The duties of those who work with NEPA frequently include other planning functions, preparation of permit applications, monitoring environmental compliance, and liaison with regulatory agencies. Failure to carry out the regulatory functions and live up to the terms of their permits incurs severe penalties, including fines and criminal prosecution. The planning function as prescribed by NEPA typically receives lower priority attention at the installation level.

One of the important functions to be maintained by the installation in-house staff is continuously collecting and updating a wide range of data on the installation. These data are usually in support of the installation planning function, but they are also used to support NEPA. Information ranging from natural resources to ground water quality will be valuable for preparing environmental assessments. If these data are current and valid, the in-house planning staffs should be able to prepare environmental assessments with only occasional contractor support.

Staffing problems are often compounded by the severe shortage of environmentally trained personnel. As employees gain experience, they are often hired by private firms at substantially higher salaries. The resulting high personnel turnover rate leaves the installation trying to maintain a fragmented information system and a modicum of continuity.

A concern expressed frequently was the inability of staffs to prepare effective statements of work for contractors to perform NEPA studies. Of equal concern was the fact that the staff was too small to properly monitor work produced by the contractors. Contractors who do not receive strong guidance in their statements of work are often free to study whatever they believe is necessary. Loose contract administration can result in overinflated studies that do not necessarily focus on the specific issue needed for NEPA compliance.

Many DoD NEPA staff expressed support for a "prime contractor" or "general manager" approach to contracting for studies. Under that approach, the in-house staff would be in charge of the overall study, and specific data collection and research functions beyond in-house capability would be contracted to specialty subcontractors. Biological, archaeological, botanical, or hydrological investigations are examples of specialty areas that would likely require contractor technical expertise. Under the general manager concept, control would be tightened and in-house knowledge of the installation and the surrounding communities would produce a more cost-effective study. Staffs would not have to waste time "educating the contractor." This scheme, on the other hand, requires a higher level of DoD staffing than is available at most installations or headquarters.

If the DoD decides to implement NEPA earlier in the planning process, an even more persuasive argument is made for in-house development of NEPA documentation. Assessments and studies conducted at early stages are less detailed and less technical. Much of the work is inherently governmental. Moreover, early planning decisions accompanied by environmental evaluations tend to be iterative. As more alternatives are examined, the NEPA professional staffs need to be in a standby mode to offer candid internal advice. The knowledge that in-house teams gain is valuable as a program moves through many phases of its life cycle. Slow response time from contractors confined to specific scopes of work does not enhance

the higher level and earlier decision-making processes. This phase of NEPA compliance is best handled by in-house Government staffs.

The Ballistic Systems Division (BSD) at Norton Air Force Base effectively uses its Air Force Regional Civil Engineer (AFRCE) for facilities planning, which includes planning for all NEPA functions. Its experienced staff provides in-house advice and conducts studies for many phases of the MX program. BSD estimates the program has spent more than $100 million on comprehensive planning support, including EISs since 1980, and of that amount, $17 million has been spent on NEPA documentation. The AFRCE planners believe they can make their greatest contribution when they become involved at the earliest stage of project planning. They admitted that it was not always easy to gain access to the process early. Persistence and persuasion are frequently required. Even with programs as mature as MX, decision makers are not always comfortable in dealing with facility and NEPA issues at the initial stages of project planning. Program managers and system designers inherently focus on system issues first and support issues later.

The Naval Facilities Engineering Command (NAVFAC) in Alexandria, Va., created a two-man team devoted to knocking on the doors of selected Washington, D.C., area PMs to provide advice and assistance with environmental and facilities planning. While the size of the NAVFAC staff is limited, the staff believes it has made good progress during the past 4 years. Of significant help is the Chief of Naval Operations requirement that all major programs be screened and certified by the Navy Logistics Review Group before reaching their next milestone. Programs that have not addressed the key elements of ILS risk delay. Facilities and environmental issues are a vital element in the review process.

The NAVFAC team has noticed increased awareness of environmental issues since the review process has been initiated. It estimates that in the course of its involvement, facility deficiencies for major programs have dropped from 80 percent to a level of 60 to 65 percent. The team does not conduct environmental assessments (EAs) and studies. Its focus is developing awareness of facilities and environmental requirements during early planning processes. It estimates that to provide coverage for all programs would require a staff of four to six people. The expansion of the Navy's acquisition organization to create additional PEOs could cause that estimate to increase slightly.

INTER-SERVICE COMMUNICATIONS

Communications between the NEPA professionals on the OSD staffs and each of the Service staffs would seem to be one means of keeping abreast of new developments in NEPA compliance. We found that communications link to be surprisingly weak. Even intra-Service communication was not very strong, probably a reflection of the limited number of full-time staff members involved with NEPA. The new DoD NEPA Coordination Committee provides an opportunity for some information exchange especially since a recent DoD decision mandated Service representation among its membership. However, its agenda is tailored to major policy issues and Joint programs.

Organizational differences among the Services may inhibit communications, but this constraint can be overcome. We found no publications such as newsletters that focus on NEPA compliance. Periodic publications would be valuable in promoting professional growth. Interest was expressed in conducting a NEPA symposium for working-level professionals as encouraged in the CEQ Regulations (Section 1506.7) but thus far none has been planned.

Training is a common focus within each of the Services and perhaps provides the most effective communications in use today. The Navy has contracted for training NEPA staff personnel both at the field level and at the executive level. The Air Force is pursuing a similar arrangement with a contractor. Unfortunately, the two Services did not discuss this common interest area before each moved independently. Savings could have been realized.

In summary, we believe that the NEPA community in DoD is not aware of the benefits of exchanging information and ideas.

INFORMATION SOURCES

We examined the need for a DoD database of NEPA information to aid in the preparation of NEPA documents. One such database could contain abstracts of existing EISs and major EAs to serve as examples for those who must write an EIS or EA. Cambridge Scientific Abstracts already maintains such a database for EISs from all Federal agencies. (We used that database to provide the information shown in Appendix B.) The Cambridge service is not well used, however, and writers of EISs and EAs say they do not find the concept particularly useful. If they need examples,

they can obtain them through informal channels with a few telephone calls. Appendix E provides details of the Cambridge service.

Another form of database could provide the technical information that goes into EISs and EAs. Appendix E also provides examples of the many existing databases in this category. Technical information for NEPA studies and documents can be divided into two broad categories: general and site specific.

General Data

General data are comprised of information available from various data sources including periodicals, databases, and manuals. General data include technical information in such fields as zoology, biology, chemistry, archaeology, and hydrology. Regulatory information is also available from databases that maintain on-line access to Federal, state, and local regulations. General management information is available from newsletters and periodicals that provide current data on how others are implementing NEPA, the status of legal initiatives, and matters of general NEPA interest.

The Nature Conservancy and the agencies it has helped create in each state and some other countries maintains one of the most important databases to help with NEPA assessments. One of the Conservancy's primary missions is to record and share data on rare and endangered species of biota. Extensive maps showing habitats and ranges of species help evaluate the environmental sensitivity of different locations. Some DoD installations are actively involved with the Conservancy programs and contribute local data to state databases.

General data originate from governments, institutions, commercial firms, and other sources. The information can range from on-line modems to compact disk-read-only memory (CD-ROM) to hard-copy periodicals. The cost for general information varies widely. Many of the Government databases are free to Government users. Commercial on-line access can cost from $2,000 to $5,000 a year depending on the type of data required. Many of the services include data research by individuals at no increase in the subscription price.

Site-Specific Data

Site-specific data provide the primary source of information from which EAs and impact statements can be derived. Many of the data should already be available

to the installation planning staffs. Occasionally, installations require specific studies to be conducted when additional data are required. The installation master plan probably incorporates many of the existing data in its land use and site plans. Data such as protected habitats, soil conservation areas, noise and explosive zones, legal boundaries, and secure locations are important data elements for initiating environmental studies. Community issues over noise, traffic, and schools provide input for conducting EAs. Constraints governing use of air space can be a critical factor affecting flight operations. Technical site data provided by previous soil borings, surveys of underground storage tanks, and air and water sampling also form a baseline for the environmental "footprint" of a military installation.

When proposed actions have the potential to affect the environment, additional data are often required. Wildlife surveys, research of historical structures, noise profiles, and ground water studies are examples of additional data collection efforts that could be required to supplement data already available from the installation. Each data collection effort adds to the installation database, which is continually expanding.

This site-specific database is most valuable for DoD installations in developing EAs and impact statements. The quality and quantity of the data vary widely from one installation to the next. At installations located in communities and regions with high environmental interest or with sensitive environments, the data generally are more complete and the demand for more accurate information is greater. We found that some installations are creating their own local databases to handle their environmental data. Minimum levels and standards for NEPA data probably cannot be prescribed because of the extreme variability of data needs for each installation. However, standardizing the format of these local databases could be useful.

NEPA IN OTHER FEDERAL AGENCIES

Actions initiated by other Federal agencies can have far-reaching environmental consequences. Examples of those actions are timber harvesting in national forests, construction in national parks, highway construction, and control of fisheries. Discussions with representatives of a few selected agencies reveal that many of those agencies have extensive NEPA compliance programs in place.

The Department of the Interior, in its oversight of the National Park Service, uses programmatic EISs to develop plans for actions being considered for the park

system. Scoping meetings are held well in advance of specific site plan preparation to ensure public involvement at early stages. Comments from citizens attending the meetings are factored into the agency's detailed plans.

The Forest Service also uses programmatic EISs to solicit early public input to its planning process. Forest Service plans are designed to cover a 10- to 15-year period and provide a broad framework for subsequent detailed decisions. Mineral exploration and timber harvest contracts, which could result in significant environmental impacts if not carefully managed, are outlined in the early scoping process.

Exploration of the outer continental shelf and drilling rights are subject to NEPA considerations. The Department of the Interior coordinates with affected coastal states and their agencies to hold early scoping meetings long before the first shelf parcel is sold and drilling permit issued.

The NEPA implementation has become a standard part of planning for Federal highways. Highway plans must consider the immediate site impacts within the rights of way and must also evaluate future impacts from other roadways, community facilities, and related actions.

A significant difference between the agencies we contacted and DoD is their extensive use of in-house staffs. They believe the expertise developed has enabled them to become more efficient in preparing NEPA documentation. Moreover, the availability of the in-house staff to provide advice to agency decision makers has helped ensure that decisions are made with appropriate and essential environmental considerations.

CHAPTER 4

THE NEED FOR CHANGES

THE BENEFITS OF BETTER NEPA IMPLEMENTATION

The Department of Defense needs a better means for including the provisions of the NEPA in its decision making. Chapters 1, 2, and 3 and Appendix A show how inattention to the NEPA requirements is costing the DoD dearly. A concerted DoD effort to better implement the NEPA would have three benefits: it would save time and money; it would decrease environmental damage; and it would help to convince local communities, the general public, and Congress of DoD's commitment to the environment.

Savings in Time and Money

The first benefit is the most immediate and practical one: saving the Services time and money. DoD decisions are coming under increasing environmental scrutiny and it is becoming more common for communities and environmental groups to turn to the courts to challenge proposed DoD programs and actions. A typical court challenge costs the Services hundreds of thousands of dollars to defend. If they then lose the case or settle out of court, they usually have to pay the litigant's court costs in addition. More important, however, the courts have mandated program delays that can cost even more and may be detrimental to our national security. For example, the courts suspended or restricted testing of DoD's electromagnetic pulse simulators at seven sites until NEPA requirements were met. Another example is the biological warfare laboratory that was to be constructed at Dugway Proving Ground in Utah. The Army was sued for failure to provide NEPA documentation, and that eventually led to a permanent court injunction against construction of the laboratory. The courts give every indication that they will increase their involvement unless the Services learn to better accommodate the requirements of the NEPA.

Perfect DoD adherence to NEPA will not entirely eliminate litigation because as attorneys in the Services and the Department of Justice point out, most NEPA litigation is not really driven by concerns for the environment. Instead, it is an attempt to stop DoD actions for any number of economic or other reasons. For

example, public-spirited citizens who support the need for a proposed project, but who oppose any attempts to locate that project in a specific location, may use an environmental issue to achieve their objective. Good faith environmental consideration on the part of the DoD will not eliminate hidden agendas. However, DoD decisions that are well documented to meet the NEPA requirements will ensure that the court cases are brief and the outcomes are favorable. Case histories[1] show that under NEPA the courts do not question the wisdom of a Government agency's decision but only whether environmental impacts were considered when choosing among the options available. If documented environmental consideration were to become routine, communities and environmental groups would lose their incentive to sue the Services under NEPA.

The costs of litigation are not the only costs that can be avoided. The intent of NEPA is to make Government decision makers aware of the environment's needs at every stage of their planning and programming. This environmental awareness should encompass other environmental legislation such as the Clean Air Act; Clean Water Act; Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation, and Liability Act; Endangered Species Act; Architectural Resources Protection Act; and the National Historic Preservation Act. The proponents of a program should consult with their environmental staffs and let them review statements of work for systems development to ensure that these requirements are accounted for in a program's early design and scheduling. Failure to do this has often led to increased costs and program delays. Some permit approvals take many months and cannot be waived. For example, Vandenberg Air Force Base is expected to expend a year to obtain the air emission permit for its power plant. Some environmental impacts must be mitigated by proper design. At Castle Air Force Base, for example, the design for an aircraft wash hangar failed to include a wash water drainage collection point. That requirement had to be added later in an expensive and delay-causing modification. Moreover, such late additions to a project are not budgeted for in its appropriation, and funds must be sought elsewhere. At Castle Air Force Base, the additional cost must come from the installation's operations and maintenance funds.

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[1]Strycker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223 (1980); Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978); Baltimore Gas & Elec. Co. v. NRDC, 462 U.S. 87 (1983); and Marsh v. Oregon Natural Resources Council, 490, U.S. 104 L. Ed. 2d 377, 109 S. Ct 1851 (1989).

Even in the preliminary design of weapon systems, environmental issues are important and failure to consider them can be expensive. For example, designers may specify environmentally damaging paints or other compounds when safer compounds may be available to do the same job.

Cleaning up the environment once it has been damaged has a cost and that cost can be enormous. NEPA documents being prepared by SDI decision makers have revealed serious environmental problems at a missile target range on the Kwajalein Atoll in the Marshall Islands. Hazardous wastes from previous programs over the past 40 years have contaminated the ground water. The removal of the hazardous wastes is estimated at $108 million, but the far larger, but as yet unestimated, cost will be that for restoring the soil and ground water for the island's inhabitants. Proper environmental consideration during past decision making could have mitigated much of the environmental damage, and the remaining damage could have been cleaned up sooner and far cheaper.

Less Environmental Damage

Many DoD decisions have not considered the environmental consequences and our environment has suffered as a result. Sometimes that environmental damage is unavoidable because of the overriding needs of national security or the absence of less damaging alternatives. In most cases, however, the environmental damage can be mitigated if we recognize it early enough in the decision making.

Damage to the environment does not always have dramatic and immediate consequences. However, environmental damage eventually has consequences for us all. If these damages can be avoided or lessened by shrewder decision making, the DoD will certainly share in the benefits of a cleaner environment. In fact, a cleaner environment is a DoD goal. In his Annual Report to the President and Congress, January 1990, Secretary of Defense Richard Cheney said, ". . . the Department of Defense not only promotes, but seeks to be a leader in, environmental compliance and protection. Consistent with that aim, DoD is working to incorporate an environmental ethic into all defense activities."

Greater DoD Credibility

The third benefit of NEPA compliance is greater credibility in the eyes of the local communities, the general public, and Congress. The loss of this credibility can

have serious consequences for DoD and for national defense. An example at the local level is the Mississippi National Guard's military exercises in the De Soto National Forest. For years the Guard had conducted these exercises without informing the public and without the required NEPA considerations. When it eventually produced an EIS, the Guard had lost credibility with the community and the public outcry at the environmental impact led to an end to the training. Now, community cooperation is difficult to gain no matter what the issue.

In a more general sense, it is important for the nation to hold its military in high esteem. A nation's pride and confidence in its armed forces help, in turn, to maintain the morale of the men and women in uniform. This mutual benefit is an important, albeit unquantifiable, factor in national defense. Bad publicity over failures to honor the NEPA – a public law – can erode some of DoD's credibility. Moreover, if DoD is seen to disdain the environment when protection of that environment is so high on the public's agenda, the public may not be so eager to support its military in other matters. Credibility with Congress is also important. Constant litigation brought under NEPA may eventually lower DoD's standing with the nation's lawmakers and lead to tighter and less favorable controls. Proper NEPA compliance is a small price to pay for the benefit of credibility.

THE NEED FOR CHANGES IN DECISION-MAKING PROCESSES

From our findings in the four categories of DoD decisions that can affect the environment (see Chapter 2), we assessed DoD decision makers' awareness and attitude toward NEPA and found some decision makers wanting in one or both (see Chapter 3).

Defense acquisition and basing decision makers feel that NEPA is a military construction issue. Many are not aware that the provisions of NEPA apply to all decision making from the earliest stages. Moreover, in general, those decision makers are under the misconception that NEPA requires them to base their decisions on environmental consequences when, in fact, it merely requires those consequences to be considered. The actual requirement is far less threatening than the perceived one.

Some decision makers who are aware of NEPA requirements are reluctant to follow them. Using the procedures at every decision level is cumbersome and sometimes NEPA provisions call for public disclosure and debate. Such debates can

be harrowing, and the preparation for them can be time consuming. Decision makers are usually under intense pressure to implement programs and meet milestones on limited budgets, and most are not enthusiastic about meeting added requirements.

The inadequate awareness of NEPA and the reluctance of some to implement it can be diminished with changes in DoD's decision-making processes. Many of DoD's decisions are made through a formal process that usually includes specific documentation and formal committee review. For some of these processes, however, the actions required by NEPA are either not included or not emphasized. The following subsections discuss how the four decision-making categories that can affect the environment can incorporate NEPA.

Defense Acquisition

The defense acquisition program, described in Chapter 2, is a highly structured and formalized decision-making process. DoD instructions and directives require those programs to submit justifications, cost estimates, and test results in prescribed formats at specific milestones in the process. Each Service also has a similar, structured process that the decision maker must follow in conjunction with the DoD process. (The Services' processes may soon be superseded by new DoD acquisition directives that require all Services to follow the same procedure.) Throughout these processes, specific NEPA requirements have been omitted, which is one of the reasons for poor NEPA implementation.

In the defense acquisition program, opportunities are available for bringing environmental considerations into the decision making very early in the process. Early consideration is mandated by NEPA implementing regulations in Section 1501.2: "Agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts." Section 1502.5 goes on to say, "An agency shall commence preparation of an environmental impact statement as close as possible to the time the agency is developing or is presented with a proposal. . . . The statement shall be prepared early enough so that it can serve practically as an important contribution to the decision making process and will not be used to rationalize or justify decisions already made." The instructions define this point of early involvement as the "feasibility analysis (go/no-go) stage." The courts have ruled that the NEPA process be integrated with

agency planning "at the earliest possible time."[2] Moreover, they have held that the EIS must be prepared "before any irreversible and irretrievable commitment of resources,"[3] which means that DoD decision makers must begin to consider the environment almost immediately after a concept is formulated.

In defense acquisition, this early involvement means introducing environmental considerations by Milestone 0, Program Initiation/Mission Needs Decision. DoDI 5000.2 requires the Milestone 0 decision to include affordability, life-cycle costs, and operational utility.[4] Those areas would be affected by any required mitigation measures needed to protect the environment. For example, the disposal costs of radioactive wastes from a nuclear-powered vessel will affect the life-cycle costs (albeit very minimally) and a new, faster low-level fighter aircraft may need new ranges over which to train. The full details and costs of the associated environmental requirements cannot be determined by Milestone 0 since any idea would still be in the concept stage, but their likelihood should be documented to begin the NEPA administrative record that will be so important during later and more definitive stages of the decision making. The DoD should require some sort of environmental documentation at Milestone 0 to ensure that NEPA is included at the very beginning of the decision making, to build a team concept that includes the environmental staff, and to reinforce DoD's commitment to environmental consideration throughout the decision-making process. In addition, if a system is to be procured for more than one Service, DoD should designate the Service that is to be responsible for the environmental documentation. It should designate that Service at the same time it designates the lead Service for the procurement of the system.

The Navy's Seawolf (nuclear-propelled attack submarine) program is an example of a program that successfully considered environmental factors at Milestone 0. The Seawolf (SSN-21) is the Navy's newest attack submarine and its program manager is aware of how environmental issues could affect its deployment. The Navy decided at Milestone 0 to reduce the vessel's hull size to avoid high life-cycle maintenance dredging costs and the resulting environmental complications that come with that dredging

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[2]Thomas v. Peterson, 753 F.2d 754 (9th Cir. 1985).

[3]Connor v. Burford, 836 F.2d 1521 (9th Cir. 1988).

[4]DoDI 5000.2, op cit.

By Milestone I of the acquisition process, Concept Demonstration/Validation Decision, the environmental consequences should be an integral consideration. That milestone includes another look at the life-cycle costs and review of program alternative tradeoffs. It also looks at the appropriateness of the acquisition strategy and thereby gives reviewing authorities a chance to see whether an environmental management plan has been made part of that strategy. Moreover, a favorable Milestone I decision approves proceeding with the concept demonstration and validation for a new program. At that point, DoD begins an "irreversible and irretrievable commitment of resources," which the courts use as a criterion, as mentioned previously.

For the remaining milestones, the DoD should require NEPA documentation among the reports the proponents present to the decision makers. Even in Milestone V, which does not occur until 5 to 10 years after initial deployment, consideration is given to disposing of displaced equipment and that may have substantial environmental consequences. Moreover, these arguments apply to DoD's proposed new milestone structure, which may be implemented within the year. Under the new system, the milestones will be reduced from 6 to 5, but the total scope of the decisions to be made will remain the same.

Introducing NEPA consideration at each acquisition milestone would be consistent with DoD's current policy of ensuring that new acquisitions have the logistics systems to support them. DoDD 5000.39[5] requires PMs to appoint integrated logistics support (ILS) managers to minimize the cost and risks in supporting their new systems. Although environmental risks are not mentioned in the directive, they can certainly affect the timing and cost of fielding a new acquisition. The ILS plan, required by the directive by Milestone I, should also address the environmental issues raised in the environmental management plan.

The decision makers for the acquisition milestones sit on the Defense Acquisition Board (DAB) and the 10 DAB acquisition committees. Currently, only the Installation Support and Military Construction Committee is charged with environmental oversight. That charge reflects the common perception that environmental issues are a concern only at the construction stage of a program. In

[5]DoDD 5000.39, op cit.

fact, DoD should charge the DAB and all 10 of the DAB acquisition committees with the implementation of the NEPA requirements.

The arguments for and against an acquisition are presented to the DAB and DAB committees in specified report formats. None of these formats currently require environmental documentation although they are ideal vehicles to use for achieving NEPA's goals. For example, at Milestone 0, the mission need statement (MNS) is submitted before funds are requested for a defense program. The MNS format calls for descriptions of manpower, personnel, training, and safety constraints but makes no mention of environmental constraints. Other examples that show how these documents fail to consider the environment are given in Appendix D.

Once environmental considerations are required in the defense acquisition program's documentation, the battle is still only half won. The Deputy Assistant Secretary of Defense (Environment) [DASD(E)] must be satisfied that the new requirements are met and that the provisions of NEPA are being followed. Although the acquisition program could be improved to better include DASD(E), even under the current system it is possible for DASD(E) to influence environmental consideration during the DAB process. Three weeks before the DAB meets, a proponent of a new system must give seven briefings to various decision makers, one of whom is the Assistant Secretary of Defense for Production and Logistics [ASD(P&L)] to whom the DASD(E) reports. Since the briefing covers acquisition strategy and construction planning, it is appropriate for the DASD(E) to interject environmental concerns.

Such DASD(E) involvement, either under the current system or an amended one, would require a commitment of DASD(E) resources to research and prepare for the briefings. That effort would be especially necessary if the acquisition documents specifically required the proponents to address environmental issues. Moreover, if DoD were to extend environmental oversight to the DAB and all the DAB acquisition committees, the demands on the DASD(E) staff would increase substantially. With NEPA now prominent, the DASD(E) staff would have to respond to more inquiries and perform more research and coordination.

The Services must undertake a corresponding effort. Moreover, not only will their headquarters staffing requirements increase, but the staffs at the program and

project management levels will also have to increase to ensure that NEPA requirements are indeed followed.

Each Service has established procedures by which it meets the documentation and milestone requirements of the defense acquisition program. These separate procedures may soon be eliminated if the DoD proceeds with plans to mandate one system for all Services. However, individual procedures are in place currently and, like the DoD procedures, they often omit environmental considerations or fail to emphasize them. For example, the Air Force uses a statement of operational need (SON) for its internal coordination leading up to Milestone 0. In the SON, the Air Force requires the proponent of an acquisition to furnish preliminary requirements for O&M activities, among other things. The SON format calls for consideration of supportability requirements such as manpower, personnel, training, human factors, operational security, basing support systems, and anticipated O&M requirements for programming purposes. Despite this level of detailed consideration, the SON has no requirement for consideration of environmental impacts. The Air Force does not address the environment until preparation for Milestone I in the system operational requirements documents (SORDs). A SORD explains how to operate, employ, deploy, and support the proposed system, and thus, it needs to consider environmental factors. In a SORD, however, environmental discussion is required only in the section for facilities and land and then only in a narrow context. (That restricted requirement is another example of NEPA being viewed as merely a construction consideration.) If DoD does not move to standardize the Services' acquisition procedures, it should require the Services to add and emphasize environmental considerations in their various internal processes. That added emphasis will require the Services to commit more man-hours to NEPA implementation, either by reorganizing existing job responsibilities or by adding staff.

Basing

Basing decisions range from deployment of major weapon systems to base closure and realignment actions to the movement of functions to new locations. Potential environmental impacts include expanded training areas, more frequent or noisier weapons training, different aircraft flight patterns, greater demands on water supplies, new construction, land acquisitions, fiscal impacts, and changes to the local community.

Many basing decisions are the result of defense acquisitions, and NEPA requirements for them are relatively easily met. To meet the early environmental consideration requirement discussed in the previous section, the Services must start with the defense acquisition program. For major acquisitions, basing decisions are part of the DAB approval process. Decisions on locating new acquisitions are usually made by Milestone II, Full-Scale Development Decision. Therefore, the environmental documentation already produced during design considerations and public hearings can serve as the basis for the environmental impact analysis for the basing decisions. Much of the groundwork would already have been done and the general knowledge about the acquisition's potential environmental impacts need only be applied to the specific locations under consideration. This approach would also meet the NEPA requirement for early environmental consideration. Moreover, the NEPA implementation regulations encourage this "tiering" of the environmental documentation.

Including environmental considerations in base closing and realignment decisions is more difficult. Public Law 100-526, which established a base realignment and closure commission in 1988, specifically exempted the decision makers from the provisions of NEPA. In 1990, the Secretary of Defense offered a list of installations for closure consideration. The final decisions will still be made by Congress, however, and DoD has no control over how that body includes environmental issues among the politics of its decision making. Despite that uncertainty, DoD planners should still consider the environmental issues because, whether specifically funded or not, DoD will still have to pay for any environmental cleanup requirements. The Services usually designate special teams to work base closure and realignment issues. These teams should alert the decision makers to the potential environmental costs of the decisions. For example, the Federal Government may not dispose of land until all hazardous material has been removed and the property restored to a safe condition.

Basing decisions can also be unrelated to defense acquisitions and base closures and realignments. Military units may be moved or re-equipped because of changes in policies and military doctrine. Those decisions may be made at the Service, major command, or corps level, and this decentralized decision making increases DoD's difficulty in monitoring NEPA compliance. Unlike decisions made in the defense acquisition program, these decentralized basing decisions have no mandated decision

milestones, standing review boards, or standard documentation through which NEPA can be enforced. However, a 1977 statute, 10 U.S.C. 2687, requires DoD to obtain congressional permission to close bases that employ 300 or more people or to realign missions if such action causes a 50 percent or 1,000-job reduction at an installation. DoD review of the documentation prepared for Congress gives it an opportunity to determine how well NEPA was included in the decision making. The DASD(E) staff could easily be included in the review process although such inclusion could again require the DASD(E) to apply more resources to NEPA implementation.

For decentralized basing decisions that fall below the 300-person threshold of 10 U.S.C. 2687, DoD has little access to monitor NEPA compliance. Consideration of the environmental consequences and proper NEPA documentation for these decisions depends on the field-level decision makers' awareness of NEPA and their enthusiasm for complying with it. NEPA awareness among field-level decision makers should be improved, as is discussed subsequently in this chapter.

Military Construction

Military construction has the most visible and direct impact on the environment. That fact may be one of the reasons that many decision makers view it as the sole domain of NEPA. Another reason may be that at the point of construction, environmental consequences are hard to ignore any longer. Whatever the reason, DoD and the Services have given the MILCON community, including the facilities planning function, a leading role in NEPA implementation. This prominence and many years of NEPA litigation have encouraged the MILCON community to develop the best NEPA control measures among the four categories of DoD decision making. The Services require their MILCON decision makers to give great consideration to the environment and to document that consideration in the construction approval document, DD Form 1391, Military Construction Project Data. The proponent of the construction must indicate what NEPA documents are required and whether they have been completed. That information accompanies the DD Form 1391 throughout the review and approval process.

Environmental consideration at the MILCON phase is too late, however, for construction resulting from defense acquisition or basing decisions. In those cases, many EISs are initiated at the MILCON stage when they should have been prepared far earlier to guide the decisions that led to the construction. The EISs merely serve

to justify decisions already made and are not an integral part of the decision making. Moreover, their timing violates the NEPA requirement for early environmental consideration discussed previously. An example of the problems this can cause is the Air Force's Ground Wave Emergency Network (GWEN) radar sites. That network is to consist of more than 100 radar sites around the country. By the time the construction community was given orders to construct the sites, it was evident that NEPA had not been a part of the acquisition and basing decisions. No site visits had been made before siting each radar tower, and none of the documentation required by NEPA had been produced. As a result, the Air Force was sued over basing decisions in Oregon and Massachusetts. It won the court case in Oregon but agreed not to build one of the towers. In Massachusetts, where the basing decision had sited the radar tower in a sensitive wildlife refuge, the Air Force lost the case and the court issued an injunction against construction. These outcomes could have been avoided if NEPA had been a part of the decision making before the program reached the construction stage.

Ideally, the construction environmental documentation should be just another tier of the documentation begun during the previous decision making opportunities. For acquisitions, for example, construction would be at least a third tier after the documentation for the defense acquisition program and basing decisions.

Not all MILCON results from new or replacement acquisitions or basing decisions. Installations request construction projects to replace, expand, or upgrade their existing facility assets. In this case the environment can be affected only by the decisions surrounding the actual construction. These decisions are very decentralized. Approval of siting decisions, for instance, usually goes no higher than the major command. A facility's design is determined by the installation and the construction agency, with the major command participating sometimes. Good NEPA implementation therefore lies with many people, and the DoD must rely on their awareness and acceptance of NEPA requirements. In the next subsection, we discuss ways to improve NEPA awareness and acceptance.

Operations

Operational decisions cover a broad range of actions from training and exercises to land and air space management. An example of an operational decision affecting the environment is the Navy's decision to increase low-level flight training at Fallon

Naval Air Station in Nevada. A hasty, poorly analyzed EIS was prepared and the community claimed adverse noise affects on the population and livestock. Years of litigation followed, and the Navy's standing in the community has been severely damaged. Another example is the decision of the commanding officer at Vandenberg Air Force Base to allow commercial exploration, development, and production of oil and gas resources on its land. In this case, the Air Force successfully developed an EIS.

Like some of the basing and military construction decisions, many operational decisions are made at the major command and installation levels. Even those made at Service and DoD headquarters can originate within many directorates. This decentralization and the diversity of the decisions in this category provide a challenge to policy makers trying to ensure better DoD compliance with the NEPA. Since so many decision makers can be involved in this category, a general increase in NEPA education and awareness is needed to improve NEPA compliance. Full compliance with NEPA requirements will not occur until the "corporate culture" of DoD and the Services comes to accept the wisdom of environmental protection and believes that the environment can be protected without serious effects on the military's mission. This transition is already under way and the current generation of commanders and managers are more sensitive to environmental issues than were their predecessors.

To accelerate this growing NEPA awareness and acceptance, DoD and the Services can take several actions. First, the provisions of NEPA need to be included in the curricula of some of the Service schools and the formal training courses each Service provides. The schools range from the military academies to professional military schools and from courses for newly selected installation commanders to courses for PMs. Many of the school curricula cover the responsibilities of command, the art of leadership, and the theories of management, as well as specific job-related policies and procedures. Thus, NEPA can appropriately be included in many of the curricula since it can affect the mission in so many ways. It is another factor today's managers must deal with and every sign indicates that NEPA will be strengthened. The DoD and the Services need to equip their decision makers with the knowledge to deal with this new factor in their planning. They also need to teach the benefits of environmental protection to help foster more positive attitudes toward NEPA requirements.

The DASD(E) has already begun this formal education process with a presentation of a NEPA case study at the Defense Systems Management College at Fort Belvoir, Va. Appendix F provides a list of some more schools and courses that could increase NEPA awareness and acceptance by adding the subject to their curricula. The two fundamental points this education should make are that NEPA applies to all decision making not merely that for MILCON and that it requires consideration of the environment and formal documentation at the earliest stages of these decision processes.

The second action needed to accelerate NEPA awareness is better dissemination of NEPA information. Such information should range from success stories to costly failures. That information flow can help build a "corporate culture" of NEPA awareness. DoD can use any or all of dozens of existing publications to carry NEPA information. Some examples are the *Airman*, *All Hands*, and *Soldiers* magazines. Publications targeted to specific groups such as command, staff, general, and flag officer newsletters and periodicals are also important vehicles for NEPA information. A NEPA article could be adapted for publication in several of these periodicals to cut down the writing workload. In addition, DoD should consider development of a new publication devoted to NEPA to help a concept gain its acceptance. For example, the Department of Energy hired Advanced Sciences, Inc., to publish a regular bulletin on the concept of shared energy savings, a new concept in energy conservation that is finding acceptance difficult. The bulletin includes articles on success stories and failures and lists information sources. A similar bulletin on NEPA could effectively disseminate important and useful information.

A third action to accelerate NEPA awareness is to make known the senior leadership commitment to NEPA. Many policy statements have been made on the increasing concern for the environment in general, but none has specifically addressed NEPA. NEPA addresses a special environmental concern – the future environmental consequences of today's decisions – and it deserves specific attention. An occasional policy letter or expression of concern from the ASD(P&L) or even the Secretary of Defense would help to raise NEPA in a decision maker's consciousness. That awareness would be especially useful in the defense acquisition program, which many believe is too early for NEPA consideration.

The fourth action is a publication review. Because operational decision making is so diverse, the directives, instructions, regulations, manuals, and pamphlets that

address them number in the dozens. Many of these documents list objectives and considerations and impose documentation requirements. They should include the NEPA requirements wherever decisions may have an environmental impact. For example, the Army's regulation on Army Forces Training states that good training complies with current doctrine and is well structured, efficient, realistic, and safe. It does not say that good training also minimizes unnecessary damage to the environment. The DoD directive on mineral exploration and extraction on DoD lands states that the DoD policy is to make the lands available for mineral exploration and extraction to the maximum extent possible consistent with military operations, national defense activities, and Army civil works activities. It does not mention a DoD policy on environmental protection for those lands. Omissions such as those fail to remind decision makers about NEPA, but more important, they send a subtle message that DoD and the Services are not really serious about implementing NEPA.

The four actions cited here will help to establish the environmental ethic that the Secretary of Defense is seeking in all defense activities. Once established, that ethic will help to ensure that the environment is considered by the Services' multitude of operational decision makers.

THE NEED FOR CHANGES IN PROGRAM AND BUDGET REVIEWS

Acquisitions, basing, MILCON, and operations all have one common need before they can affect the environment: funding. Appendix C describes the DoD's Planning, Programming and Budgeting System (PPBS). The programming and budgeting review process is a very structured one that presents opportunities to check for NEPA compliance before requests are funded. However, that process is not the best point at which to monitor NEPA compliance. Many of the initial decisions have already been made before a formal request for funds is submitted and it is already too late to introduce environmental considerations. Programs begin to gather momentum when proponents start to compete for funds, and if NEPA has not been considered at a program's conception, its introduction at the funding stage is difficult at best. Moreover, since not all decisions are reflected in the PPBS documents, those documents do not provide a complete picture. These points notwithstanding, the various reviews for funding requests can provide a means to spot-check decisions for NEPA consideration and to help publicize DoD's environmental emphasis.

The DASD(E) staff has two ways to become quickly involved in the PPBS. The first is to include NEPA reviews in the Program Objective Memorandum (POM) Preparation Instructions (PPI). The PPI offers guidance for preparation of the Services' program proposals, called POM submissions. That guidance specifies the documentation to be submitted for the POM and its format. Since the DASD(E) would fund the performance of a NEPA review for a POM submission, that office should specify categories of POM submissions for which the NEPA reviews are required. Examples of possible categories are certain types of acquisitions, military construction, and land acquisitions; requests authorized by a particular DAB milestone; and categories based on dollar thresholds. The categories could be varied each year based on suspected weaknesses in the Services' NEPA implementation. The requested NEPA reviews could be in the form of the FONSIs, EAs, or EISs, or they could be a simple statement of what NEPA actions have been taken.

The second way for DASD(E) to become involved in the PPBS is through the POM issue books. Those books serve as a means for the various DoD staffs to formally question the Services' staffs on their POM submissions. Should the DASD(E) staff suspect, for example, that a new initiative will be environmentally damaging, it can raise the subject in the POM issue books and require the administrative record of NEPA compliance.

Both of the above avenues of involvement would require more DASD(E) staff dedicated to NEPA compliance. Structuring and writing PPI inputs and then reviewing the results are not trivial tasks. Doing enough background research on the Services' programs to formulate questions to raise in the POM issue books will also demand many staff hours.

THE NEED FOR MORE EFFICIENT PREPARATION OF NEPA DOCUMENTATION

The NEPA can be better implemented if its research and documentation process is improved. That process is often daunting to decision makers and serves to discourage proper NEPA consideration.

The Benefits of Tiered Environmental Impact Statements

One of the most effective ways to introduce NEPA early in the decision-making process, to provide a sound administrative record, and to discourage NEPA litigation is the tiered EIS. The NEPA implementing regulations, Section 1502.20, encourage

that tiering. The courts have held tiered EISs to be permissible[6] and in some cases necessary.[7] In fact, without some tiering, some decisions, such as defense acquisitions, would be difficult to handle and still fully comply with NEPA. Environmental consequences must be considered early in the decision-making process, and that consideration must be documented. However, at the early stages of many decisions, the decision makers cannot enumerate all of the potential environmental impacts because they do not have enough information or the concept has not been developed sufficiently. Those decisions therefore lend themselves to a series of documents – the tiered EIS – that define the environmental impacts with increasing accuracy and in increasing detail.

Tiered EISs are rare in DoD, but other Federal agencies see the benefits of tiering and have used it to their advantage. For example, the Fish and Wildlife Service uses tiered EISs for projects such as siting and constructing new fish hatcheries.

Tiering has many advantages. First, it encourages early consideration of the NEPA requirements. If an EIS is to be tiered, the first tier is not expected to have all of the answers. Thus, the EIS can be prepared without complete information. Decision makers would find preparation of an EIS less threatening if it first could be done in less detail. Second, it provides the sound administrative record that is needed to discourage NEPA litigation. Since public hearings are held for each tier of the EIS, the decision makers are alerted early to the public's concerns. Before the next tier's EIS, the decision makers can either make changes to accommodate those concerns before they delay the program or they can document why no changes can be made without affecting the program's mission. In either case, the prospects of court action later in the program are reduced. Moreover, NEPA legal counsels at the Department of Justice hold that issues that should have been discussed at the early tiers' public hearings cannot be brought up at later tiers. Early airing of the issues therefore does not expose DoD to greater risk of protracted arguments. It may, in fact, work to DoD's advantage since public interest in DoD programs is less during the early concept stages when implementation is uncertain or years away.

A third advantage of tiering is that it decreases the efforts of subsequent decision makers to meet the NEPA requirements. For instance, the first tier in an

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[6]Baltimore Gas & Elec. Co. v. NRDC, 462 U.S. 87 (1983).

[7]Thomas v. Peterson, 753 F. 2d 754 (9th Cir. 1985).

EIS may be for a weapon's acquisition. Those responsible for the basing decision in the second tier of the EIS could then use much of the information and data already assembled. Finally, the decision makers at the installation level would have a substantial EIS record on which to build their tier of the EIS. The installation's EIS tier would be quicker and of a higher quality at the stage when local community interest is highest.

A fourth advantage is protection of the environment. The greater scrutiny encouraged by the tiering process may enable decision makers to modify their programs to avoid unnecessary environmental damage regardless of the public's interest or the chances for program delays.

Tiering Examples

Acquisition programs provide an opportunity to initiate tiering as early as Milestone 0. At that time, PMs and ILS managers need to become sensitive to NEPA requirements and the environmental consequences of their programs. They should identify exotic materials or other materials that could become unusually hazardous during testing or operations. Systems that require expanded ranges for testing and training should be highlighted. Additional basing requirements, such as strategic homeporting or "beddown" of the B-2 aircraft, need to be explained to the public in preliminary scoping meetings. Another example of a program that requires early discussion with opportunity for public comment is the concept of a rail garrison for the MX program. Classified, or "black," programs are also subject to NEPA; however, public comment is not required until the program, or parts of the program, are declassified. Therefore, effective NEPA decision making for those programs is vital because outside experts will not have the opportunity to comment until environmental consequences have already occurred, at which point significant remediation costs may already be incurred.

A programmatic EIS is planned for the next phase of SDI program development. Site-specific EISs will then be tiered as detailed planning proceeds. The SDI staff estimates that conducting regional public scoping meetings before specific sites and EISs are determined will help reduce the overall project costs of NEPA compliance from an estimated $150 million to between $35 million and $40 million.

New base requirements can be determined at Milestone 0 or Milestone I and trigger the tiering process. Performance characteristics that could determine special

range requirements for testing new systems should be known at Milestone I. Aircraft requiring low-altitude air space for testing and training need to have their basing and testing support requirements defined by Milestone I. A programmatic EIS can be prepared, even though the Service has not reached a final decision on specific locations for testing and basing.

Tiering may be difficult to apply to force realignment decisions, but nonetheless it should be considered. When base closures are included in those realignments and surrounding communities are faced with major economic impacts, preliminary scoping meetings can be extremely useful. Public feedback, with its concerns and ideas, can aid in determining the impact of each alternative and can help in making the right choice.

Development of installation master plans provides a unique opportunity for tiering. Those plans describe land use, proposed capital improvement projects, boundaries, unique wildlife areas, and safety zones and include numerous other planning factors; as such, they provide an important baseline for environmental information. Public comments and concerns expressed before the plan is finalized can greatly enhance its credibility. Subsequent scoping meetings for specific projects identified in the master plan then become fairly simple with focused agendas. DoDD 4165.61 specifies that master plans shall be offered for coordination with nearby communities; thus, a portion of the tiering process is already prescribed.[8] Moreover, a Joint Service publication, *Natural Resources Land Management*, requires an installation's natural resources management plan to include an EA, which may lead to an EIS if any contentious environmental issues need to be addressed.[9] The information in the EA or EIS could be included in the master plan, thereby reducing the effort it would take to present the entire master plan in a public scoping meeting. To prepare the needed documentation to complete the NEPA requirement should be a fairly straightforward process. The master plan and its back-up data should already contain most of the required information for a programmatic EIS.

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[8]DoDD 4165.61, *Intergovernmental Coordination of DoD Federal Development Programs and Activities*, 9 August 1983.

[9]This publication is Army TM 5-630, Navy NAVFAC MO-101.1, and Air Force AFM 126-2 and is dated July 1988.

Tiering can be incorporated into comprehensive plans for conducting annual training exercises. Impacts from nighttime operations, low-level flights, temporary troop buildups, and firing-range requirements can form the basis for subsequent EAs and EISs. Army regulations require that EAs and EISs be prepared for field training and command post exercises when existing installation EAs and EISs do not accommodate the planned training.[10] The decision maker should expect to gain greater public acceptance by discussing plans with the public as soon as the information is available.

Early involvement with the public through use of tiering can help avoid last minute "show stopping" issues. While this benefit may appear self-serving, the environment becomes the bottom-line winner. The better informed a decision maker is on environmental issues, the better chance the decision maker has to minimize impacts. In the end, DoD benefits from an effectively informed and involved public. DoD's image as a protector of the environment can only be enhanced.

A Document to Precede the Environmental Assessment

At the earliest stages of a program, decision makers are unsure whether to start the formal, NEPA-mandated environmental documentation. In the concept stage of a proposal, the proponents may discuss alternatives that have varying consequences for the environment. Thus, they should include the environmental impacts in the discussions and document the decisions for the administrative environmental record. At that stage, however, no "irreversible and irretrievable commitment of resources" has occurred, and that commitment is the criterion adopted by the courts to determine when an EIS must be filed. Moreover, even an EA at the earliest concept stage is not an appropriate document for recording the environmental discussions. The EA must lead either to a FONSI or an EIS and there will probably not be enough information to make that determination at the early concept stage. Moreover, most proposals never leave the concept stage and requiring an EA for each of them would be an enormous waste of resources. The prospect of formal NEPA documentation with its early commitments and disclosures discourages decision makers from taking the environment into consideration at these early stages.

The DoD could easily resolve this conflict by publishing an additional document that precedes the EA. That document would serve to record the environmental

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[10]Army Regulation (AR) 350-28, *Army Exercises*, 2 July 1985, para. H-17.

discussion during the early concept development stage — for example, up to Milestone 0 in defense acquisitions — with the requirement that an EA be initiated as soon as the proposal leaves the concept stage. That requirement is important because without it, decision makers would be tempted to continue using the DoD document to postpone or avoid an EA or EIS. Instead, the preliminary DoD document should serve as the first tier of tiered environmental documentation.

The idea of this additional DoD document is not new. NEPA professionals have been advocating it for some time.[11] The Navy authorized a Preliminary Environmental Assessment (PEA), but its use was discouraged by the CEQ because it was being used too often in lieu of the formal NEPA documents. The Air Force currently authorizes a Preliminary Environmental Survey (Air Force Form 814). The concept of that survey is good. The form is easy to complete and the depth of analysis for each alternative suits the limited information that is probably available at the early stage of concept development. The drawback is that the survey is not done by the proponent but by an Environmental Planning Function (EPF). The proponent requests the Preliminary Environmental Survey by submitting Air Force Form 813, Request for Environmental Impact Analysis, to the EPF. By the time the form is submitted, however, many of the decisions have been made and the alternatives narrowed. Often, only one alternative is listed on the request. To be effective and timely, the proponent must be responsible for the preliminary document.

In addition to the preliminary conceptual environmental assessment, the DoD's preliminary document could serve a second purpose. The implementation of NEPA would be improved if a program's proponent were to plan and document the environmental coordination it needs. This documentation could be done on the same DoD document, which would become a plan for environmental management. This initial planning would help to focus some attention on the environmental aspects right at the beginning and would help to build a team approach as proponents call upon the NEPA staff for early advice. It would also provide some direction when the program's concept plans are passed to other decision makers.

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[11]For example, Dr. James I. Mangi, NEPA Project Director for Labat-Anderson, Inc.

A preliminary DoD document used in the way we have described expands the administrative record without replacing the EA or EIS and should be welcomed by the CEQ.

The Benefits of In-House Environmental Documentation

The DoD contracts for the production of most EISs and many EAs. Environmental documentation by contractors is often an inefficient use of resources. First, the contractor must be brought to the level of knowledge of a program's proponents. Next, the contractor must be kept abreast of the effect developments have on the environment. Keeping the contractor knowledgeable and informed is often difficult since the contractor is usually well removed from the decision makers and cannot be aware of the subtle changes in a program that can have major environmental impacts. Finally, a frequent complaint from the Government's decision makers and NEPA professionals is that the Government pays the contractor for more documentation than is necessary to meet the needs of NEPA.

Government resources can be used more efficiently by preparing the NEPA documents in house. A good example is the EIS produced by Fort Polk's environmental staff for the Multi-Purpose Range Complex (MPRC). That EIS led to a successful project completion because the in-house writers knew the decision makers and were in constant communication with them. That EIS cost $67,000 compared to an estimate of $250,000 if it had been contracted out. Moreover, the EIS was completed in only 18 months, which would not have been possible under contract because of the initial contractor-selection procedures and the contractor familiarization period that would have been necessary.

A compromise between use of contractors and in-house preparation is to have the in-house NEPA staff act as a general manager for several small contractors. Those contractors would be experts in fields in which the in-house NEPA staff have too little expertise. This general manager approach allows the in-house staff to keep in close coordination with the decision makers while taking advantage of contractor resources. The result is tighter control over the process and a more focused final product. The Fort Polk EIS is a product of this general manager approach.

The sooner in the decision-making process an EIS is initiated, the more beneficial it is to do it in house. At the earlier conceptual stages of a program, there are many unknowns and many alternative directions the program may take.

Changes are frequent and with little warning. Because of these factors, a program manager has difficulty writing a statement of work for a contracted EIS, and changes in the program will mean expensive changes to the contract. An in-house staff, on the other hand, can pick up on the changes quicker and is able to react to them quicker than can the Government in the contractual process. As the DoD succeeds in introducing NEPA earlier in its decision making, the benefits of preparing EISs in house will mount.

In-house EISs are seldom possible, however, because of the lack of NEPA staff at all levels of command. Environmental demands at the installation level are increasing and even the members of the Fort Polk NEPA staff now say that they could not do another in-house EIS even under the general manager approach. Similarly, the small NEPA staffs at the headquarters levels are unable to handle more in-house EAs and EISs. Other pressures also act to discourage in-house EA and EIS preparation. For example, the Services and major commands often make funds available for proponents to contract for the preparation of EAs and EISs, and such funds are far easier to obtain than authorizations for in-house staff increases. For that reason, installation and other NEPA staffs are not likely to take on the additional burden of in-house preparation.

The inefficiencies of contracted EAs and EISs will therefore continue, unless the Services agree to relatively modest increases in in-house staffs at some levels.

Increasing Contracting Efficiency

Since so much environmental analysis and documentation are done under contract, DoD would benefit by improving the efficiency and effectiveness of the Services' contracting procedures. For example, an often-heard complaint from the Service NEPA staffs is the difficulty of writing statements of work for contracts to produce EAs and EISs. That complaint is especially prevalent for EISs since too few are produced to build up the expertise of the organizations that must contract for them. A DoD pamphlet of exemplary statements of work would be well received by the Services, as would advice on the relative merits of the various contracting avenues. Those contracting avenues include two-step sealed bidding, preferred bidders lists, and negotiated contracting. Simplified procedures to quickly contract with specialty support contractors, such as testing labs and sampling and surveying firms, are also required to improve efficiency.

The DoD should recommend that statements of work include a limitation on the number of pages that an acceptable EIS should have. The CEQ implementing regulation encourages this limitation,[12] but that regulation is not always followed. Moreover, the CEQ regulation applies only to the body of the EIS and often an avalanche of data is moved to the appendices. Guidelines for streamlining the appendices should also be developed, perhaps using the tiering technique to keep project-specific EISs focused only on relevant information.

THE NEED FOR BETTER INTER-SERVICE COMMUNICATION

We found very little inter-Service sharing of NEPA information, solutions, or ideas, even though the Services share so many NEPA problems and opportunities. The Services could realize substantial savings in time and money by increasing their communication and by avoiding some of their duplicated effort. The quality of DoD's NEPA implementation would also improve if good ideas were shared and pitfalls highlighted for others to avoid. Moreover, DoD's concern for NEPA would be more credible if the Services' policies and compliance efforts were coordinated. The potential benefits of information sharing will increase as the nation's rising environmental concern increases the NEPA workload.

The first meeting of the bimonthly NEPA Coordination Committee was held on 5 February 1990, and this new body is an excellent start toward improved communication. The committee is composed of staff members from OSD and the Services and their charter is to help promote the most efficient approach to NEPA compliance when more than one DoD component or organization is involved. An even greater benefit would be realized if the committee were to be restructured as a NEPA working group. Lower-level coordination could cover a broader agenda of NEPA issues and exchange information of immediate use to those with "hands-on" NEPA responsibilities. Table 4-1 lists candidates for the agenda.

The DoD has ample precedent for convening such a working group. For example, DoDD 6050.10 establishes a group called the Armed Forces Pest

[12]CEQ *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, 1 July 1986, Sections 1500.4, 1501.7(b)(1), and 1502.7.

TABLE 4-1

SAMPLE AGENDA FOR A NEPA WORKING GROUP

Training programs
Legal opinions
Lessons learned from NEPA actions
Contract management
Ongoing EISs and EAs
Examples of statements of work and NEPA documents
Issues for referral to CEQ
Updates on CEQ policy and legal precedents
Availability of databases and computer bulletin boards
Master plans and the EIS
CERCLA and NEPA integration
Identification of DoD-wide deficiencies
Comparisons of manning standards and job descriptions

Management Board (AFPMB).[13] The AFPMB deals with the problems of vector-borne diseases that are common to all of the Services and are easier dealt with through a coordinated approach and shared ideas. The board meets three times a year and coordinates DoD policy on pest management. It also serves as an advisory body to DoD management. The problems of environmental protection are just as real as those of pest management and need at least as much coordination among the Services.

The NEPA working group should meet quarterly. In addition, an annual NEPA symposium could be geared toward a wider DoD audience. A symposium would not only add to the communication channels among the Services' NEPA staffs, it could be used as part of the effort to increase NEPA awareness among all DoD decision makers. An address by the Department of Justice or the CEQ staff would make far more of an impression than a policy letter or magazine article. The National Association of Environmental Professionals currently holds an annual NEPA symposium for all Federal agencies. However, DoD is large enough and specialized enough to benefit from its own.

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[13]DoDD 6050.10, *The Armed Forces Pest Management Board*, 15 March 1985.

From these NEPA symposiums and working groups, the DoD would gain the intangible benefit of "networking" among the NEPA staffs. The private sector knows well the advantages of this concept. It gives the staff members the confidence to call upon each other, whereas now, we find that some staff members do not know the names of their counterparts from the other Services.

THE NEED FOR ACCOUNTABILITY FOR NEPA IMPLEMENTATION

If managers are not held accountable for proper implementation of a policy, that policy is not likely to be properly implemented, especially if implementation requires additional resources in a resource-austere environment. Such is the case with NEPA. Accountability may come when poor NEPA implementation eventually causes program delays or additional costs, but even that link is tenuous. The chain of decision making from weapons design through basing to supporting facility construction is complex and environmental consequences of decisions may not be apparent until many years later. Under these circumstances, holding decision makers accountable for NEPA implementation is extremely difficult.

The Services use two other forms of accountability to encourage performance in desired areas: the IG inspection and the performance report. Those two methods help to identify and correct poor performance before it leads to serious consequences such as program delays or additional costs. Our findings in Chapter 3 have shown that those two forms of accountability are not usually applied to NEPA implementation.

Chapter 3 lists three IG programs to which NEPA compliance could be added: periodic compliance inspections, SIIs, and special inspections. At the installation level, compliance inspections raise awareness of, and attention to, those items known to be liable for inspection. They are conducted by Navy and Air Force major commands but no longer by the Army. Commanders would be held accountable for NEPA implementation if the Navy and Air Force major commands added it to their IG inspection checklists. Installations, however, already implement NEPA better than at higher headquarters and staff organizations, and compliance inspections are usually not performed on those latter organizations. The DoD and each Service could also add NEPA compliance to their SII lists, which are recommended areas for inspection primarily by the major command IGs who can accept or ignore the recommendations. Major commands may also establish their own SII lists. The Tactical Air Command, for example, has included the installation environmental

program on its SII list. The third IG program – special inspections – offers the best opportunity to improve NEPA implementation. The DoD, Army, and Navy IGs have already conducted some of these inspections on environmental issues, and NEPA implementation would fit well into their agenda. Moreover, special inspections are conducted at levels above the installation at which many of the major decisions are made. Special inspections not only provide accountability and increased awareness for the items inspected, they also propose remedies for problem areas uncovered. All of these attributes would be useful in the DoD endeavor to improve NEPA compliance.

Accountability through performance reports could also be useful. In Chapter 3, we showed that NEPA implementation could be included as a rating criterion by either including it in the definition of one of the areas already rated or adding it to the Services' SII lists that serve as guidance to those doing the rating. However, the Services are not likely to include NEPA implementation as a single rating criterion under either of those two methods. It is too narrowly defined and is competing with dozens of similar criteria that proponents would like to see included in performance ratings. The Services are more likely to consider a broader criterion such as environmental protection. That criterion could then be defined to include NEPA implementation among the other environmental laws.

THE NEED FOR MORE STAFF DEDICATED TO NEPA IMPLEMENTATION

Our findings in Chapters 2 and 3 and the conclusions we have drawn in this chapter on the changes needed for better NEPA implementation have led to one further conclusion: OSD and the Services should increase the staff they dedicate to NEPA implementation if they are serious about improving that implementation. As Table 3-1 shows, the full-time NEPA staffs at the DoD and Service levels are quite small as they are at the major command and installation levels. These staffs are already overstretched and adding the workload of implementing the ideas advanced in this report would only add to their difficulties.

At the DoD level for example, resources would be needed to organize and administer a NEPA working group and annual symposium. Lesson plans to add NEPA to school curricula, newsletters, and pamphlets on EIS contracting would take more staff hours than the one full-time staff member could provide. Also, a comprehensive review of publications for NEPA references and greater involvement

in the PPBS would take many more staff hours. At the Service level, an increase in tiered EISs would require more resources than the current delayed, single EIS approach. Providing NEPA the constant visibility among decision makers that it needs demands a large commitment in resources. Finally, if DoD and the Services are successful in increasing NEPA compliance among decision makers, the sheer increase in NEPA transactions, documentation, and inquiries will overwhelm already overtaxed staffs.

DoD should be careful where it places the additional resources, however. At the installation level, better EISs can be done more economically by in-house staff than by contract. However, rarely does an installation produce enough EISs or major EAs to justify additional staffing. DoD's strategy should be to assign NEPA duties to the major command PM's office and various headquarters staffing functions to positions close to the major decision makers. In these positions, environmental consideration and documentation should be routine and environmental expertise would have the most leverage for sound NEPA implementation. This strategy is succeeding at the Air Force's BSD and at NAVFAC's Washington area headquarters. The assignment of these extra NEPA duties may call for work reassignments or new positions depending on the local staffing situation.

The Air Force has already recognized the need to increase its NEPA staff and the Deputy Secretary of the Air Force for Health, Safety, and Environment [DSAF(HS&E)] proposes an increase of 19 full-time positions to a total of 23. Air Force headquarters expects that this increase will lead to proportional increases in the NEPA staffs at Air Force major commands.

If the Services assign more resources for NEPA at these key headquarters staff positions, they should be able to handle more EISs totally in house or through the general manager contracting approach. The entire NEPA community agrees that in-house EISs are more focused on the appropriate subjects because the preparers are more familiar with the issues and have better access to the decision makers. This tighter control increases the quality of the EISs and makes them far cheaper. The savings in contractor costs and in delays from poor EISs could easily pay for additional staffing. Moreover, the expected increase in tiered EISs will make it easier for installation-level staffs to meet many of their NEPA requirements. Additional NEPA-dedicated resources at the major command level could also supplement installation staffs when major EISs are required and thereby raise the

possibility of more in-house EISs at the installation level. Thus, the installations will benefit indirectly from the additional headquarters resources.

Experience gained from other agencies confirms the merits of devoting in-house effort to NEPA implementation. Staffs that gain expertise and become familiar with an agency's operations and policies are more effective in supporting decision makers early in the planning process. Similarly, their relationships with regulatory and other state agencies enhance the procedural requirements for scoping meetings and studies. Agencies that use their in-house staffs to the fullest extent possible seem to do the best job of complying with NEPA.

THE NEED FOR A DoD NEPA DATABASE

The Federal NEPA community is looking at how computer databases could help the in-house staff prepare better EISs and EAs. Generally, two such databases are proposed. The first is simply a database of all EISs and possibly major EAs that have been produced. These could be used as examples for anyone who has to write one. The idea assumes that there are enough similarities among EISs or enough EISs in each category of environmental impact to make the database useful. The second potential use for a database is for technical information. With this concept, the EIS writer could avoid some technical research by turning to the database for current and easily accessible information. That information would range from the breeding habits of fauna to the locations of aquifers.

We have concluded that a centralized DoD-funded and -managed database, under either concept, is currently a low-priority need for improving NEPA implementation. The DoD's NEPA resources could be used far more effectively for other priorities. Most EISs and many major EAs are produced by contract and there would be few in-house users of such a database. Until the DoD commits more resources to in-house EIS and EA preparation, the major users of the database would be contractors. The database would therefore benefit the DoD only if it lowered the cost of the contracts or improved the quality of the contractors' products. The Government could try to encourage lower contract prices by specifying that a contractor use the database. However, that would make the Government liable for the information in it and would complicate any contract disputes. Moreover, it would be difficult to show that EIS contracts would cost less because the contractor had

access to a DoD database. Contractors already have access to a large number of databases which they currently use.

That availability of other databases is a second reason for DoD not to enter the field. Our findings in Chapter 3 have described some of them. A database of unclassified EISs from all Federal agencies is maintained by Cambridge Scientific Abstracts. That company publishes annual compendiums of abstracted EISs and makes the full EISs available on microfiche. The usage rate for the service is very low, which means that those responsible for writing EISs and EAs are unaware of the service or do not think it particularly valuable. Some of the NEPA staffs we spoke to were not aware of the service and most said that if they need sample EISs, they could obtain them with informal requests to their major commands or other installations.

The Department of Urban Planning at the University of Illinois has a list of over 400 commercially available technical databases on the environment. The university works in conjunction with the Army's Construction Engineering Research Laboratory to maintain some of the databases and distribute information on the others. Army and Air Force NEPA staffs use the services periodically and the Navy has expressed an interest. With such a wealth of information available at reasonable cost, a DoD database would be duplicative. Moreover, a look at the content of these databases shows how broad the information content is and hence, how comprehensive a DoD database would have to be. The DoD would have to commit considerable resources to maintain such a comprehensive database. None of the other Federal agencies have seen fit to make such an investment.

A look at a similar database already in use gives some idea of the resources required. The Defense Technical Information Center (DTIC), under the auspices of the Defense Logistics Agency (DLA), collects, stores, catalogues, and disseminates more than 1.7 million records, of which 1.4 million are accessible on line. The DTIC also provides microfiche and hard-copy data in addition to search assistance. A separate system under DTIC titled Manpower and Training Research Information System (MATRIS) parallels the requirements of an environmental database. MATRIS covers the specific field of people-related research and engineering for DoD. It is managed in San Diego and supports its subscribers with on-line and search capabilities similar to the services provided by DTIC. Data are extracted from DTIC's Work Unit Information System (WUIS) to form the MATRIS database. MATRIS requires 12 to 17 people to operate and an annual budget of $500,000. It

appears that an environmental database would require substantial enhancement from outside sources before DTIC could provide the level of technical information to be of use to the DoD NEPA community. If DTIC were to develop and manage a separate environmental database for DASD(E), with capabilities similar to MATRIS, funding and manpower would need to be transferred to DLA.

A final reason for the DoD not to invest in a centralized technical environmental database is that it would address only general information. As our findings showed, the most important information that goes into an EIS or EA is site specific. For example, the NEPA staff at Fort Polk had general information about the breeding and nesting habits of the red cockaded woodpecker, which was affected by an expansion of an MPRC training range. However, the staff had to make a head count of the birds to ascertain their exact habitat in the area. In fact, the birds were concentrated in a different area than the one predicted. As this sort of local information is compiled, it becomes part of the database supporting the installation's master plan. This plan and its supporting data are therefore more valuable to the NEPA staff than a DoD database would be.

Compiling environmental data into local computerized databases has merit and some installations have done this. A standardized format for those decentralized databases would have some advantages. It would facilitate inquiries from higher headquarters and may encourage more installations to establish local databases.

CHAPTER 5

RECOMMENDATIONS

From the findings and conclusions of the previous chapters, we make the following recommendations:

- *The Under Secretary of Defense (Acquisition) [USD(A)] should introduce NEPA at specific decision points in the Defense Acquisition Program.* The documents brought before the 10 acquisition committees and the DAB for each acquisition milestone should include those required by the NEPA. DoDD 5000.1 and DoDI 5000.2 should be changed to reflect this requirement. Moreover, USD(A) should require the Services to include the NEPA documentation in their internal acquisition procedures and the acquisition proponents to include the DASD(E) in the milestone briefings.

- *The DASD(E) should become more involved in the PPBS.* The formal review process of the PPBS comes too late to use as a guarantee that those requesting funds have complied with NEPA. Many important decisions have already been made before funds are requested. However, the PPBS can be used as a quality control check to monitor the health of NEPA compliance and to see where improvements are needed. The DASD(E) should introduce into the POM preparation instructions some requirements for NEPA documentation on certain initiatives. The criteria for levying this requirement should be varied every 2 years so that particular areas of concern may be targeted. The DASD(E) should also monitor major defense programs to determine which ones are not complying with NEPA requirements and then raise any noncompliance as an issue in the POM issue books. These measures will give the DASD(E) a continuing check on how well the Services are meeting the requirements and spirit of NEPA. They will also serve to increase NEPA awareness among DoD decision makers.

- *The DASD(E) should initiate a NEPA awareness program.* A NEPA awareness program is needed to reach the decision makers who make acquisition, basing, construction, and operation decisions outside of formal review processes. Many of those actions may be small compared to major defense acquisitions but they may still impact the local environment.

  The first part of the NEPA awareness program should be a review of DoD instructions, directives, and other publications to see where NEPA can be introduced or better emphasized. The Air Force and the Navy should also be encouraged to conduct similar reviews of their publications. (The Army has

already completed such a review and in most cases has made the changes.) Examples of the changes needed are given in Appendix C. The second part of the program should be the introduction of NEPA into the curricula of appropriate schools and training courses. The DASD(E) has begun this process and should continue offering lesson plans tailored to the schools and courses' formats. Examples of schools and courses appropriate for teaching NEPA are given in Appendix F. The third part of the program should be the regular submission of NEPA articles to Service-related magazines and similar publications. Finally, the fourth part of the program should be policy letters from the Secretary of Defense and USD(A) emphasizing the DoD's commitment to NEPA and its early introduction into all aspects of DoD decision making.

- *The DASD(E) should encourage more efficient EIS preparation.* The DASD(E) should encourage the Services to use more tiered EISs. In defense acquisitions, for example, the tiering should begin at the earliest concept stage, continue through the basing decisions, and on into the site-specific decisions for construction. DoD and Service publications should emphasize the benefits of tiering and in some decision-making processes it should be mandatory.

  To encourage the concept of tiering, the DASD(E) should introduce a preliminary NEPA document to precede the EA. The document should be used at a proposal's earliest conceptual stage to address its potential environmental impacts. The document should also be used to lay out a NEPA compliance plan for the proposal, and it should be formalized in a change to DoDD 6050.1. This change should require that once a proposal moves beyond the early conceptual stage, an EA must be initiated. However, the thresholds beyond which an EA is needed should be defined. For example, the thresholds could be Milestone 0 in the Defense Acquisition Program and any decision to commit resources that will be irretrievable once committed.

  The DASD(E) should work with the Services to produce sample statements of work for contracted EISs and EAs to reduce their superfluous material and hence their inflated costs.

- *The DASD(E) should enhance communications among DoD and Service NEPA staffs at the working level.* The current exchange of information among DoD and Services is minimal and opportunities for synergism are being lost. The DASD(E) is in the best position to increase the exchange of information among NEPA staffs and should establish a quarterly NEPA working group and annual NEPA symposium. This group and symposium should be formalized by a change to DoDD 6050.1. The minutes of the NEPA working group should be given wide dissemination and used as part of the NEPA awareness program.

- *The DASD(E) should encourage the DoD and Services' IGs to include NEPA implementation on their agenda for special inspections.* Those special inspections are used to confirm the existence of problems and to recommend solutions for them. Some special inspections have already been conducted on environmental issues, and NEPA implementation would fit well into the inspection agenda. Special inspections would raise NEPA awareness and increase the Services' involvement in improving NEPA implementation. DASD(E) should encourage those Services still using IG compliance inspections for their installations to include NEPA compliance on their inspection checklists.

- *The DASD(E) should encourage the Services to include environmental protection among the criteria used in performance ratings.* The definition of environmental protection provided to the raters should include NEPA implementation. These actions would increase the NEPA accountability of decision makers at all levels.

- *The DASD(E) should dedicate more resources to NEPA and encourage the Services to do the same.* The available staff hours for NEPA requirements are insufficient for effective integration of NEPA into DoD decision making. The DoD and Services should dedicate more staffing resources to NEPA through work reassignments or new positions. Those additional resources are needed to implement the recommendations in this report and to handle the additional workload when NEPA becomes an integrated part of decision making throughout DoD. To maximize its benefit, any increase in staffing should go to headquarters staff functions rather than to installations.

- *The DASD(E) should not commit resources to development of a centralized DoD NEPA database.* The DASD(E) should commit resources to implementing the recommendations of this report before committing them to establishing and maintaining a DoD NEPA database. The effect of a DoD database on improving NEPA compliance would be minimal. Instead, the DASD(E) should publicize the existence of established databases. The head of the Department of Urban Planning at the University of Illinois has already agreed to brief the NEPA working group, once it is established, on the list of more than 400 databases the department has compiled. The Army's Construction Engineering Research Laboratory also has some environmental databases and should be willing to brief the working group.

  If, in the future, a centralized NEPA database seems more useful (for example, if most EISs were to be produced in house), then the DASD(E) should compare the cost of a DoD database with that of funding organizations such as the University of Illinois, the Construction Engineering Research Laboratory, or the Defense Technical Information Center to add to their existing databases.

Installation-level environmental databases should be encouraged since they would aid NEPA compliance at the local level and would support master planning.

APPENDIX A

EXAMPLES OF NEPA IMPLEMENTATIONS

CASE 1: NAVAL AIR STATION (NAS) FALLON, NEV., SUPERSONIC FLYING

In 1978, the installation management of the Naval Air Station (NAS) Fallon initiated an action to place 180,000 acres of Federal land under Navy control to support expanded supersonic flight operations and range impact areas. An environmental impact statement (EIS) was hastily prepared to accompany the action. However, as the public became aware of the proposal and raised questions, it became apparent that uncertainty clouded much of the proposal. The noise impact from sonic booms, particularly for low-level flights, while obviously disruptive, had not been fully assessed. Armed with inadequate information, the Navy was unable to overcome the efforts of a vocal minority of a nearby, sparsely populated community to discredit the EIS.

Efforts to resurrect the documentation languished until the 1986–1987 period, during which a supplemental EIS was prepared. It too was received by the public with less than enthusiastic support. Apparently, there had been no serious attempt to bring the public into the decision-making process and inform the community of the Navy's long-range plans. The Navy delayed plans to publish an update of the EIS in 1988 at the request of high-level officials to avoid disrupting the election process that year. Congress soon thereafter established a requirement for all Federal agencies to advise Congress of any plans to expand operations into Nevada land not already under agency control. This requirement led the Navy to declare its intention to request an additional land withdrawal for 200,000 acres and an additional 10,000 square miles of air space.

Poor coordination with other Government agencies, particularly the Nevada Department of Wildlife, have stifled the Navy's plans for expanded operations. A perceived lack of Navy cooperation is causing added difficulty in achieving basic National Environmental Policy Act (NEPA) compliance. Encroachment of a new development near a flight operations area has added voices to the level of community discontent. Any event on or near NAS Fallon, such as aircraft crashes, water supply

control, or dead cattle, seems certain to evoke public outcry. Achieving compliance with NEPA becomes all the more difficult because of the atmosphere surrounding Navy issues at Fallon.

This case has been further complicated by the possibility that impacts from the bombing and supersonic flights could be cumulative. That is, noise levels of combined sources could exceed those of any individual source. Navy officials believe this will be a difficult issue to resolve from a technical standpoint. However, they are considering a combined EIS for both supersonic flight and range ordnance.

The Navy has not resolved the controversies, although flight operations continue with minimum interference. Some believe that until Navy officials make a commitment to deal with local and state agencies on a partnership basis, progress in making effective plans and gaining approval for them will be extremely difficult. A stronger public relations program during the early stages of NEPA implementation would have reduced public outcry and avoided some of the delays encountered with the NAS Fallon program. Additionally, awareness and sensitivity to environmental concerns appeared to be lacking at NAS Fallon, particularly during the early stages of program development. This attitude might have been fostered by the very sparse population and arid landscape surrounding this Nevada installation.

CASE 2: GROUND WAVE EMERGENCY NETWORK (GWEN) RADAR

The GWEN radar is a low-frequency communication system designed to withstand electromagnetic fields generated by a nuclear explosion. It consists of more than 100 radar towers around 48 states, cross-linking various national and military command posts. The construction program was divided into two phases. The first phase involved linking together major command posts such as the Strategic Air Command (SAC), the North American Defense (NORAD), and the National Command posts. The second phase involved tying in other major installation command posts throughout the United States.

During the implementation of the first phase, the Air Force failed to properly implement the NEPA process early in the planning stages of the GWEN radar system. The Air Force relied on the GWEN prime contractor, RCA Corporation, to prepare an adequate environmental document without close oversight. RCA did an environmental assessment (EA) for the entire GWEN program and used categorical exclusions for each radar site. A computer program was written to generate a pro forma EA without specific site analysis of the environmental impacts.

Although the GWEN program office was aware of the NEPA requirements, they did not fully embrace its tenets. The extent of NEPA compliance was driven by the tight program implementation schedule. Proper NEPA compliance was compromised to meet the program schedule and minimize "unnecessary" costs. The main criterion for locating a radar site was close proximity to roads and power lines to reduce construction costs. Only one site per radar was identified as an alternative for the 50 square mile area that each GWEN radar requires. No on-site visits were made before locating each tower.

Two lawsuits were brought against the Air Force to stop construction of the radar towers, one in Oregon and the other one in Massachusetts. In the latter case, a radar tower was sited in a sensitive wildlife refuge area. After being sued, the Air Force was forced to prepare a programmatic EIS to address the overall impacts of GWEN. A tiered EA was then required for each site for the second phase. It took a lawsuit and congressional pressure [Senator Hatfield (R, OR)] to increase NEPA awareness among the decision makers. During phase two, the Air Force did an excellent job of complying with the NEPA requirements. Scoping meetings were held

and the NEPA process was fully integrated to identify potential environmental impacts early in the planning phase.

The Air Force won the court settlement in Oregon but agreed not to build a tower at one of the five Oregon sites. However, it lost the case in Massachusetts and received a court-ordered temporary injunction. In both cases, projects were delayed by the court litigation.

Preparation of a programmatic EIS starting with the first phase could have identified the potential siting problems that resulted in the two lawsuits. Necessary actions could have been taken to mitigate possible conflicts. Simple site visits as a part of the NEPA process could have prevented the siting mistakes that resulted in program delays.

CASE 3: DUGWAY PROVING GROUND, UTAH

The Army wanted to build a Biological Aerosol Test Facility (BATF) in support of its Biological Defense Research Program (BDRP) at Dugway Proving Ground, Utah. The BATF was to be used for experimenting with biological agents to test and develop effective defense measures against an array of biological weapons. The construction consisted of upgrading a metal shell warehouse structure into a Biolevel Safety 4 (BL4) quality laboratory. The total cost of construction was to be below $1.0 million to avoid appropriation line-item scrutiny of Congress. The Dugway project failed to consider all reasonable alternatives in constructing the BATF.

Unspecified Minor Construction (UMC) funds from the Military Construction, Army (MCA) appropriation were used to accomplish this project. Due to the severe competition for UMC funds, the project was accelerated with minimum planning effort. No NEPA documentation was prepared for the construction project as time was severely constrained. Furthermore, Army facilities programmers and the BDRP program manager were not aware of NEPA requirements.

The Foundation on Economic Trends filed a suit to halt construction of the BATF. When the Army was sued, defense lawyers tried to claim a categorical exclusion based on the negligible potential impacts. When that argument was unsuccessful, the Army did a quick EA. This EA was prepared by a contractor and a finding of no significant impact (FONSI) was issued in 1985. However, the plaintiffs argued that in the planning of the BATF, the Army had disregarded the NEPA requirement. They contended that this Federal action required preparation of an EIS and challenged the adequacy of the EA.

A few weeks after the lawsuit, Senator Sasser (R, TN), ranking minority member of the Subcommittee on Military Construction of the Senate Appropriation Committee, withdrew his support for the BATF and informed the Secretary of Defense, Caspar Weinberger, of his decision. The Army's failure to comply with NEPA requirements may have damaged the Army's credibility with Congress.

The U.S. Federal Court in the District of Columbia granted a permanent injunction stopping construction of the BATF on the basis that the EA was inadequate. The court stated that the Army did not thoroughly investigate the potential environmental impact of its testing activities. The Army's environmental counsel believes that a better EA could have been prepared had the Army had an

adequate NEPA staff to oversee the contractor. The project was terminated and the Army was required to pay legal fees.

Dugway prepared a draft EIS in 1988 since the EA and the FONSI were ruled inadequate. Dugway is now preparing a supplemental EIS in support of a new proposal and is seeking a $14 million MCA line-item approval. Abandoning the troubled BL4 facility, the new proposal combines construction of a downgraded BL3 facility with a life science laboratory.

If the proper NEPA procedure had been used during the planning stage and an EIS prepared, Department of Justice lawyers believe they might have won the lawsuit and saved the project with no delays.

CASE 6: NAVAL WEAPONS STATION, EARLE, N.J., MILITARY FAMILY HOUSING (MFH)

To accommodate an expanded ship berthing requirement at the Naval Weapons Station, Earle, N.J., the Navy initiated a military construction project for 250 units of family housing and an additional project for 250 units of leased family housing. The citizens of nearby Colts Neck objected to the projects. They believed they would severely impact their school system, reduce the fresh water supply, and critically strain the community's tax base.

In its EA for the housing projects, the Navy believed it had addressed the primary issues through impact assistance and other mitigation measures and did not initiate an EIS. The community was not satisfied, however, and successfully argued for a preliminary injunction to halt construction. In its suit the community cited a number of impacts, most of which were related to socioeconomic factors, that were not adequately considered in the Navy's EA. Included in the allegations was a charge that 40 of the 250 housing units had been located on a designated wetland. Although the station master plan had identified the area as a wetland, that fact was overlooked in the design and review process. Had this issue been the sole reason for the suit, the Navy could have dealt with it through resiting of the 40 units, thereby permitting the remainder of the units to proceed on schedule. However, because the suit alleged so many other problems in the socioeconomic arena, the Navy was required to let the units remain partially completed for about 2 years, until all issues were finally resolved.

During the construction delay, a satisfactory solution to the school issue was reached through redistricting, and new wetlands were established as an offset to the land used at the construction site. Nevertheless, had a thorough EA been done at the inception of the expansion program, the conflict encountered with the wetlands could have been identified earlier, resulting in minimum delay in completing the units. Moreover, had the EA led to an early EIS, the public's concerns could have been quickly identified and dealt with.

CASE 5: McCLELLAN AFB, CAL., WATER MAIN PROJECT

McClellan AFB proposed a $5.6 million military construction (MILCON) project to extend 1,000 linear feet (LF) of base sewer line into a regional junction of the Sacramento city sewer system. The base environmental planners prepared a three-page EA and a FONSI. The EA analysis was limited to an economic justification of the proposed construction and failed to address the impact on ground water quality from a possible sewer line break.

Thirty days before construction was to begin, the installation was sued by an adjacent community that feared contamination of its drinking water wells from a possible sewer line break. The lawsuit was brought based on the inadequacy of the EA. In preparation for the lawsuit, the installation environmental lawyer reviewed the three-page EA and determined that it was inadequate and that the Government could not win the case.

The construction was to be delayed indefinitely until the preparation of an adequate EA. Facing this indefinite project delay, the installation management formed a crisis management team to prepare a 100-page EA within 30 days. Meanwhile, a court injunction was issued causing a 60- to 90-day project delay. Consequently, the MILCON project had to be modified with an expensive change order to accommodate schedule changes caused by the court order.

If the NEPA process had been properly followed, installation managers could have evaluated several alternatives in hooking up the sewer line. The community lawsuit and the costly contract modification could have been avoided.

CASE 6: ELECTROMAGNETIC PULSE (EMP) SIMULATORS

The Army has EMP simulators located at the White Sands, N. Mex. Missile Range; the Redstone, Ala. Arsenal; the Woodbridge, Va. Research Facility; and the Construction Engineering Research Laboratory (CERL) at Urbana, Ill. Research and development activities at the Woodbridge facility have been ongoing since the Korean War. When NEPA was enacted, the decision makers at Woodbridge were not aware of the NEPA requirements and, consequently, they were never followed. Although NEPA did not apply to any Woodbridge R&D activities before 1970, it did not exempt the NEPA requirement from ongoing programs if they were required to be reauthorized after 1970. The R&D community did not know how to comply with NEPA.

The Foundation on Economic Trends instigated a lawsuit against the Army based on a lack of adequate EIS/EA documentation at all four sites. The suit charged that the implications of biological impacts of EMP have not been fully addressed. The court issued a Stipulation and an Order of Dismissal requiring suspension of EMP testing until EAs or EISs were prepared.

When the Army was required to prepare the required NEPA documentation, they did it very well. White Sands Missile Range and CERL have completed EAs and may resume operation. For the Woodbridge site, scoping meetings were held around the affected community in preparation for developing an EIS. During this effort the Army found that the Woodbridge EMP activities may have a significant impact on human life and they shut the simulator down. Redstone has not completed its NEPA requirements and, therefore, is not operational.

A well-documented NEPA process at the beginning could have minimized the delay in testing the simulators. The lack of NEPA awareness and the absence of NEPA expertise caused problems. In this case, regardless of how well the NEPA procedures had been integrated into the decision-making process, it is likely that a lawsuit would have been brought against the Army. However, good NEPA implementation renders lawsuits ineffective.

CASE 7: CAMP EDWARDS, MASS., MASTER PLAN

The Army National Guard wants to upgrade its facilities at Camp Edwards, Massachusetts Military Reservation (MMR). The Guard shares the MMR with the Otis Air National Guard (ANG). The Guard's proposed increase in construction and maintenance activities is in accordance with an installation master plan. An EA has been developed by a contractor to support the master plan. However, Camp Edwards officials did not want to prepare an EIS because they believed that the effort would be a significant and unnecessary workload that would slow down the construction program.

A lawsuit was brought against the Army on the basis that the EA was inadequate and that an EIS was needed for the master plan. The plaintiff charged that the building renovations would increase the MMP's capacity for training and the Army had failed to consider the environmental consequences of that increased training. The court has not yet made a final ruling. However, the Guard has agreed that the EA is inadequate and that an EIS is needed. Moreover, the case has revealed that the Guard's master plan was not coordinated with the Otis ANG which is planning to convert from F-106 aircraft to F-16 aircraft during the same period of the Army National Guard's proposed construction. This apparent lack of coordination between the two Services has caused a loss of confidence in the military on the part of local communities.

The Army National Guard has agreed to publish an EIS, which will delay its construction program by 2 years. This delay could have been avoided if the EIS had been initiated and coordinated early in the master planning process.

CASE 8: F-16 BEDDOWN AT HOMESTEAD AFB, FLA.

In 1985, the Air Force replaced its aging F-4 aircraft with new F-16 aircraft at Homestead AFB, Fla. An EA was prepared for this changeover and a FONSI was issued. The noise impact of an F-16 is much less than an F-4 since it has a quieter engine. Flight patterns for the new F-16s were to be the same as the F-4s. The F-4s were operated by the 31st Tactical Training Wing that did not have a low-altitude flying mission. Shortly after this beddown, the Tactical Air Command (TAC) assigned the base a new mission. The wing was converted from a training unit to an operational fighter wing. With this new mission, low-altitude flight training was directed by TAC.

The base used the NEPA process to identify possible sites where F-16 low-altitude flight training could be conducted. Installation managers analyzed how they wanted to fly the sorties and coordinated their plans with state and other Federal agencies. After consultation with these agencies, installation officials proposed a plan to conduct low-altitude flight training at the Cypress Military Operating Area (MOA). The Cypress MOA includes airspace over a portion of the Everglades area, 50 miles west of the installation. When a Notice of Intent (NOI) was issued, the installation encountered overwhelming public opposition to the plan.

During the F-16 basing decision process, TAC had given little thought to a need for a low-altitude training area at Homestead AFB. Before the F-16 beddown, the installation had twice proposed a need for low-altitude training. In both cases, the proposals were rejected by TAC on the basis that training wing F-4s do not require dangerous low-level flying. When Homestead AFB was chosen to receive F-16s, followed by a new operational mission, low-altitude flight became a very important training element of base operational readiness.

The TAC is preparing an EIS in support of the Cypress MOA proposed by the Homestead operating wing. The installation and TAC environmental staffs do not have the man-hours nor the expertise to prepare an EIS. They decided to use a contractor for the EIS. This decision required reprogramming $350,000 to pay for the contract effort and this took some time. In addition, the contracting process takes many months to select a qualified contractor and award a contract after the negotiation process. A contract was therefore not awarded until 1989, 4 years after the Cypress MOA was first introduced. As of May 1990, the supporting EIS has not

been completed. This EIS preparation will take an average of 3 to 4 years before it can be finalized and a record of decision (ROD) reached.

Meanwhile, the Homestead F-16s cannot fly at low altitudes over the Everglades area until TAC completes the required NEPA process. This delay has reduced the capability of Homestead AFB to meet its training mission for the newly assigned F-16 aircraft and achieve combat operational readiness. Early environmental planning for basing of the aircraft could have led to more suitable alternatives. However, it is highly unlikely that other bases would have been chosen over Homestead AFB for the F-16 beddown, even if TAC had done perfect environmental planning as required by NEPA. A more capable in-house NEPA staff could have shortened the time required to get a contractor on board by preparing NEPA documentation in house.

CASE 9: NAVY DOLPHIN PROJECT

The Navy decided to train and use dolphins for a project on the Hood Canal at Bangor, Wash. The use of the dolphins was classified. However, the Navy determined that portions of the project associated with construction of dolphin holding pens under Navy piers could still follow standard NEPA procedures.

The Navy conducted an EA that considered the impact of pilings and construction of the holding pens on the migration of salmon fingerlings and the nesting of bald eagles. It also considered the impact of dolphin feces on canal pollution. A FONSI was issued and a Corps of Engineers' permit was obtained to proceed with construction.

Animal rights activists then filed a suit claiming the Navy had violated the Animal Welfare Act by holding the dolphins illegally. The Navy stated that it had considered the humane treatment of the animals, that the training would cause no undue hardship, and that the environment of the Hood Canal, from a water temperature and cleanliness standpoint, would be suitable for dolphin habitation. After hearing the Navy's request for dismissal, the court ruled that NEPA had not been properly considered in selecting dolphins as the best alternative for its mission. The court gave the "benefit of the doubt to the animals," including a concern that penning up the dolphins would interfere with their "socialization." An EIS is being prepared in response to the court ruling.

The Navy's position is that it had carefully considered the effects of this project on the dolphins and can prove their health will not be adversely affected. However, the animal rights activists (self-described as animal rights terrorists) will not moderate their extreme views. They equate human life to animal life and have demonstrated their willingness to go to jail in defending their cause. They have vowed to tear down all zoo fences and eliminate aquariums. Sympathetic courts in the Northwest will be difficult to sway toward the Navy's position on the dolphin training. Nevertheless, the Navy plans to insert a notice into the project EIS that will incorporate the effects of the project on the animals.

Activists for broad social issues such as global warming, nuclear power, and animal rights often use specific projects to further their causes. Dealing with these issues up front, perhaps by using a separate programmatic EIS, could uncouple some of these more difficult issues from specific projects proposed by Government agencies.

In this case, the Navy determined that the environmental issue was related solely to the impact on the environment – not the impact upon the animals. Their earlier studies concerning the animals' welfare were not made part of the project EA. While it is uncertain what effect this information might have had on the decision of the court, its inclusion could have provided the public a perception that the Navy is sensitive to the welfare of the dolphins. Delays to the project might have been reduced.

CASE 10: TOMAHAWK MISSILE TESTING

The Pacific Missile Test Center (PMTC) has been test firing cruise missiles at the Naval Air Station Point Mugu, Calif., since the early 1980s. Those test firings involve launching missiles to remote targets. Such missile launches are not subject to the Clean Air Act (CAA) and they are conducted without NEPA consideration. The environmental impact of the launches is not significant and PMTC was not aware of NEPA.

Subsequently, PMTC officials decided to conduct static testing of the missiles in which they are strapped down and fired without leaving the ground. The officials chose one of the missile launching sites and assumed that the CAA would not apply to the static testing. They also assumed that the environmental impact from static tests would be no different than that of actual missile launches and they did not consider the need for an EIS. PMTC began constructing a test bed on which to strap down a missile for static testing. During construction, however, PMTC officials learned that open emissions from static tests were regulated by the CAA. They then discovered that they could not meet the California clean air standards without a large capital investment to contain the uncontrolled air emissions from the static tests. Moreover, they discovered their chosen test site is located in a wildlife habitat containing six species of birds on the endangered species list. Only then did the PMTC officials seek assistance from the installation's environmental coordinator. Investigation showed that there was no available remedy that would meet the tight schedule of the missile program and the construction project was abandoned. The $2 million spent on construction of the static test firing bed and the considerable time invested in the project were lost.

Had NEPA been made part of the decision on the static firing, an EA or EIS would have revealed the environmental impacts. The decision makers could then have chosen from among the alternative sites available.

CASE 11: MISSISSIPPI NATIONAL GUARD EXERCISE

The Mississippi National Guard has been conducting military exercises in a section of the De Soto National Forest since the Vietnam War. A Guard unit has been stationed at Camp Shelby, in the middle of the forest, since World War I. The Guard has been using the forest under a leasing agreement with the National Forest Service. However, many of the Guard's exercises have been planned without NEPA consideration and with little community input. The result has been a lack of community awareness about what the Guard has been doing in the forest.

The Army now wants to own the section of forest that it has been using and has proposed a land swap. In return for the land, it would transfer ownership to the National Forest Service of a portion of land at Pinon Cannon, Colo. The proposal requires an EIS and when the Army issued a notice of intent of the land transfer, the local community suddenly became aware of the Guard's training activities in the forest. Because EISs for previous training had been overlooked, the community lost confidence in the Guard's commitment to the environment and became alarmed at this "land grab." The land swap has now been delayed.

Had EISs been prepared for the Guard's earlier training in the forest, the Army would have been in a much stronger position to sell the idea of the land swap. Moreover, the Army would have escaped the public outrage and the resulting damage to its image.

APPENDIX B

1987 AND 1988 ENVIRONMENTAL IMPACT STATEMENTS FOR DoD

This appendix summarizes DoD's unclassified Environmental Impact Statements (EISs) for 1987 and 1988 to show the variety of decisions that are affected by the National Environmental Policy Act. This list also shows how few EISs DoD produces each year. The lists are taken from the EIS Cumulative 1987 and EIS Cumulative 1988 Cambridge Scientific Abstracts, respectively.

1987

The following subsections cite the EISs produced in 1987.

Air Force: Over-the-Horizon Radar, Alaska

Construction and operation of the over-the-horizon backscatter radar at four U.S. locations, which require 2,500 acres for very large antenna arrays.

Air Force: Over-the-Horizon Radar, North Central United States

Construction and operation of the over-the-horizon backscatter radar at alternative sites in North Dakota, South Dakota, and Minnesota. Each transmitter and receiver site requires 2,400 acres.

Army: Laser Experiment, New Mexico

Construction of a test facility to test a ground-based laser against diagnostic targets. Wildlife habitats would be eliminated or reduced.

Marine Corps: Establishment of Two Military Operating Areas, North Carolina

Establishment of airspace for two military operating areas to be used for combat maneuvers, aircraft acrobatics, air intercepts, and low-altitude tactics. Areas would not be prohibited to civilian flying.

Navy: San Francisco Homeporting, California

Construction and operation of a portion of a battleship battle group and a cruiser destroyer group. Five alternative configurations at three sites are under consideration.

Army: Proposed Barracks, California

Construction of three barracks on the Presidio in San Francisco, requiring the removal of a historic structure.

Air Force: Ground Wave Emergency Network, Massachusetts

Evaluation of final operational capability for a communications system that operates in the low-frequency band. As part of a nationwide communications system, the stations would be located on military installations and in airborne and portable terminals.

Navy: Land Acquisition for Safety Zones, California

Acquisition and management of private land to provide a greater margin of safety for the public around two target ranges.

Air Force: Air Force Reserve Mission Change, Massachusetts

Reorganizing a tactical airlift wing to a military airlift wing and replacing C-130 aircraft with C-5As. Also under consideration is an increase in hours of operation to 24 hours per day.

Army: Chemical Munitions Production Facilities, Indiana or Arkansas

Manufacture of two nonlethal components of binary chemical weapons at five possible production sites.

Air Force: Development of Oil and Gas Resources, California

A mineral resource management plan to allow for the exploration, development, and production of oil and gas on Vandenberg Air Force Base.

Army: Land Acquisition for Firing Center, Washington

Expansion of Yakima Firing Center by 63,000 acres.

Air Force: Deployment of Small Intercontinental Ballistic Missile (ICBM), Montana

Deployment of 200 small ICBMs on mobile launchers at existing Minuteman Missile sites. Family housing would have to be provided on land acquired adjacent to Malmstrom Air Force Base.

Navy: Family Housing, New Jersey

Development of 500 units of military family housing at Naval Weapons Station Earle, N.J. Also, provision of 10 acres of wetland to compensate for 3 acres previously filled in by mistake.

Army: Convert Infantry Division to a Motorized Division, Washington

Supplement to a June 1979 EIS. Convert the Ninth Infantry Division to a high technology motorized division. Impacts are greater vehicular traffic on training lands, longer and more frequent use of training lands, more firing of weapons, use of new weapons and equipment, construction of new ranges, and lease of off-post land for training exercises.

Navy: Southeast Alaska Acoustical Measurement Facility, Alaska

Establish an acoustical measurement facility to measure and define the acoustic signatures of submarines. Project includes bottom-moored equipment and shore-based facilities.

Army: Construct a Chemical/Industrial Complex, Louisiana

The complex at the Louisiana Army Ammunition Plant will manufacture research department and high-melt explosives.

Army: Clean Up of Old Ordnance Dump Sites, California

Cleanup area of old Army camp of buried ordnance to allow construction of road, park, and residential community.

Navy: Geothermal Development at China Lake, California

Construction and operation of two 25-megawatt power plant units at site of an existing 25-megawatt unit. Includes 22 additional deep steam supply wells. A joint venture contractor will build and operate.

Navy: Joint Guayule Rubber Program, Arizona

Construction and operation of a prototype rubber facility using the guayule shrub on the Gila Indian Reservation. The project will be funded from DoD funds.

Army: Chemical Stockpile Disposal Program, Eight States

Destruction of U.S. stockpile of chemical agents and munitions, preferably by construction of facilities at each storage site to avoid extensive transportation.

Navy: Gulf Coast Strategic Homeporting, Five States

Homeporting of 27 vessels at eight locations on the Gulf Coast. Involves dredging and construction of waterfront and shore facilities.

Air Force: Clean Up of World War II Dump Sites on Beach, Guam

Clean up of two military dump sites of ordnance and scrap. Two acres of forest must be cleared to move in equipment.

1988

The following subsections cite the EISs produced in 1988.

Army: Construct Biological Warfare Testing Laboratory, Utah

A laboratory would be built in an existing building to spray biological agents on animals to test protective equipment.

Navy: Operate Electromagnetic Pulse (EMP) Barge, Maryland

An EMP simulator would be used on a barge to test the effect of EMP on ships.

Army: Mission Expansion/Construction at Army National Guard (ANG) Site, Minnesota

Major upgrade of an ANG training base to expand its capacity. Project involves construction, upgrades, and relocations.

Air Force: F-15E Aircraft Beddown, North Carolina

Replace 72 F-4 aircraft with F-15 aircraft. Some construction and alteration of facilities are needed. Along with changes in flight patterns and ordnance carried.

Army: Continuation of Biological Warfare Defense Research Program, Maryland

Continue a biological warfare Defense Research Program at various installations, universities, and R&D centers.

Navy: Construct Acoustic Measuring Facilities, Alaska

Supplement to the 1987 EIS for shore facilities and underwater equipment in a canal to measure the acoustic signatures of submarines. Determine the impact on fauna.

Army: Clean Up of Old Ordnance Dump Sites, California

Supplement to the 1987 EIS to clean up an area of an old Army camp and remove buried ordnance to allow construction of road, park, and residential community.

Army: Construct Family Housing, Hawaii

Construct 600 townhouses for lower grade enlisted personnel.

Navy: Modify Electronic Warfare (EW) Range, North Carolina

Adding platforms at several sites for EW transmitters used to simulate enemy EW. Other range improvements. Some loss of wetlands and forest.

Army: Construct Medical Center, Texas

Construct new 450-bed medical training hospital and outpatient clinic. Demolish old medical buildings.

Air Force: Deploy Mobile Missiles, Wyoming

Deploy 50 Peacekeeper missiles on 25 trains at F. E. Warren AFB and at as many as 10 other installations. In the event of an enemy threat, the missiles would be deployed onto a national rail system.

Air Force: Continue Supersonic Flights, Arizona

Review of supersonic waiver for assigned airspace for military operations.

Air Force: Convey Land in Return for Facilities, California

Convey 845 acres of March Air Force Base to a contractor in return for replacement of three buildings on the base.

Navy: Convey Land to Philadelphia for Steam Plant, Pennsylvania

Convey land to local authority to construct and operate a 2,250-ton-per-day refuse burning facility. The steam is to be sold to the Navy for its shipyard, and the community will have increased its solid waste disposal capacity.

APPENDIX C

PLANNING, PROGRAMMING AND BUDGETING SYSTEM

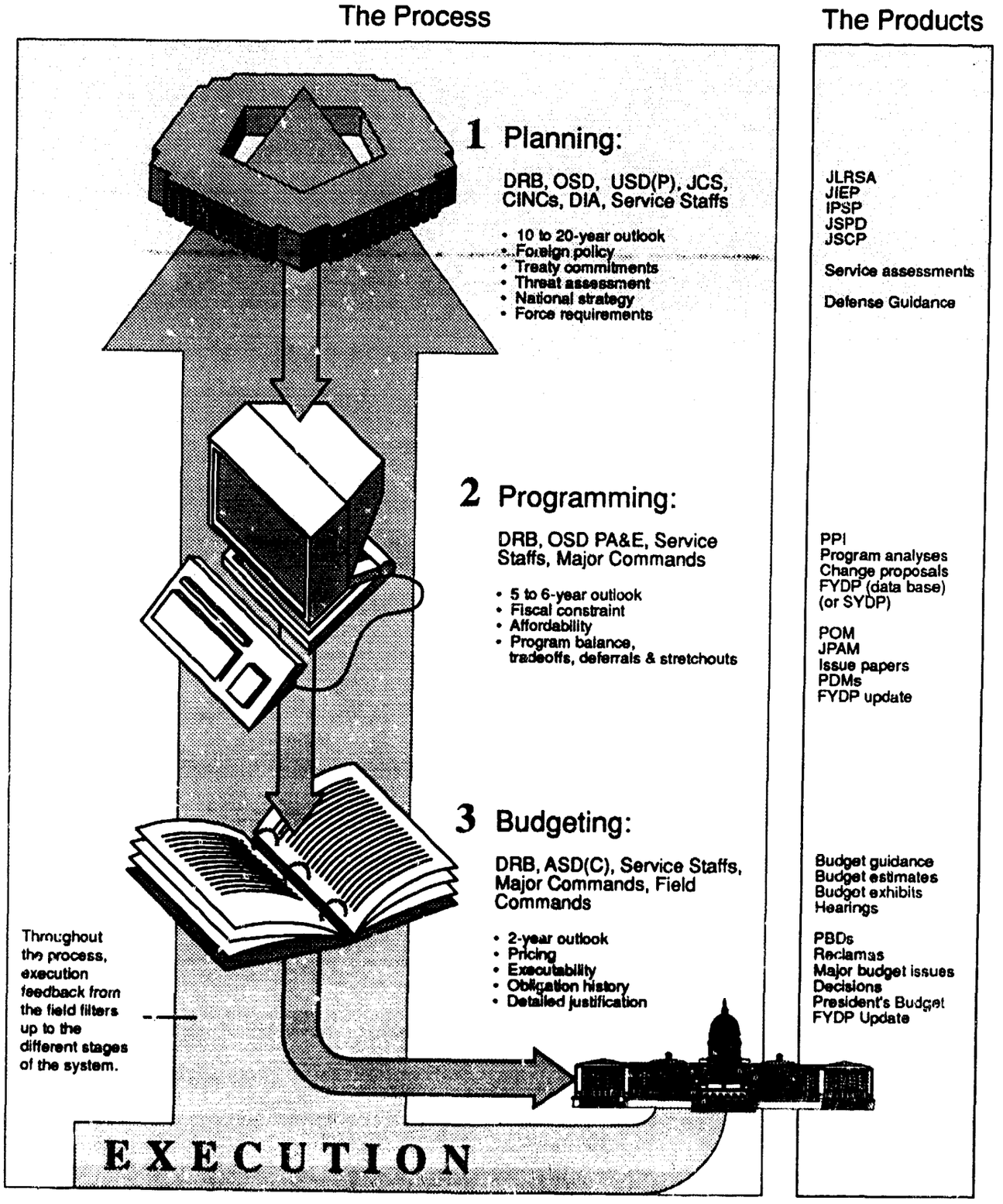
The Planning, Programming and Budgeting System (PPBS) is used by DoD to translate force requirements into an authorized program that becomes the basis for the DoD portion of the President's Budget. People involved with National Environmental Policy Act (NEPA) compliance must understand the PPBS process since most Defense decisions and follow-on actions that could result in environmental impacts require funding. DoD's resource requirements and funds allocations are predicated on its missions and roles as identified and contained in the PPBS.

The DoD is currently on a 2-year cycle for the PPBS, e.g., in April 1990 the Services submitted to OSD the Program Objective Memoranda (POM) for FY92 and FY93 covering the 6 years through FY97. The follow-on biennial budget documents are similarly prepared for FY92–FY93 for inclusion in the annual President's Budget. Congress has agreed in concept to this 2-year approach since it is given an opportunity to look at DoD's plans for the next year. It has shown little interest, however, in providing appropriations and authorizations for more than 1 year.

Figure C-1 shows some of the key elements that comprise the PPBS process and its documentation.

PLANNING

The planning portion of PPBS is a critical part of the overall system. It involves such national considerations as threat and capability assessments, long-term trends, national strategy, and economic considerations. These and many other elements are considered in developing the Defense Guidance (DG), which then becomes the basis for DoD Components to prepare POMs. The POMs advance and update the Five Year Defense Program (FYDP), sometimes referred to as the Six Year Defense Program (SYDP). The planning process begins with the Joint Chiefs of Staff (JCS) furnishing a number of background and guidance documents and data to the Secretary of



Note: Acronyms are defined at the appropriate place in the text.

FIG. C-1. THE PLANNING, PROGRAMMING AND BUDGETING SYSTEM

Defense for consideration in developing the DG. Some of the more important JCS documents include:

- Joint Long Range Strategic Appraisal (JLRSA)
- Joint Intelligence Estimate for Planning (JIEP)
- Intelligence Priorities for Strategic Planning (IPSP)
- Joint Strategic Planning Document (JSPD)
- Joint Strategic Capabilities Plan (JSCP).

The Under Secretary of Defense for Policy [USD(P)] is responsible for drafting the DG and considers these documents along with prior-year program and budget decisions, fiscal policy, and Secretary of Defense priorities. Development of the final DG document involves considerable dialogue among the Office of the Secretary of Defense (OSD), JCS, the Commanders in Chief (CINC), and the Services. When completed, the DG becomes the official link between the planning and programming processes.

This formal planning process should not be confused with individual planning efforts conducted throughout the Services. Plans for weapon systems, training exercises, and installations proceed independent of the DoD-level planning process. Plans for each of these requirements must ultimately be consistent with the larger requirements established within the PPBS. Depending upon the importance that the Secretary of Defense places on a particular issue, it could receive emphasis in the DG. Usually such issues contain significant funding implications. For example, the Defense Environmental Restoration Account (DERA), which has major funding requirements, could have specific objectives delineated in the DG. NEPA, on the other hand, requires incorporation into ongoing procedures rather than a separately funded initiative and might receive only broad reference.

PROGRAMMING

The DG establishes the goals, priorities, fiscal guidance, and midterm objectives for the DoD components to use in developing their POMs and revisions to their FYDPs. POMs include an assessment of risks associated within the constrained funding levels, the proposed force structure, and their planned support. The

programs that result after competing for the available funds must be rational and balanced.

Following issuance of the DG, OSD issues the POM Preparation Instructions (PPI), which give the Services procedural guidance for the preparation of their POMs. Details of format, data, schedules, and background information are published for each POM cycle. Section V of the PPI outlines requirements for the Force Readiness and Sustainability programs. Acquisition logistics, operations and support funding for selected weapon systems, and the DERA are included in that section. Facilities construction and maintenance programs are prescribed in Section VI of the PPI. Requirements for displaying projects in support of major weapon systems, modernization programs, and annual Real Property Maintenance Activity (RPMA) costs and line-item descriptions are outlined in Section VI. NEPA considerations are more likely to be addressed in Sections V and VI than other sections of the PPI.

The Secretary of Defense receives the POMs from each component by 1 April biennially. A copy of the POM goes to the JCS, who assess the extent to which the composite POMs comply with the DG and respond to the threat. That assessment is provided to the Secretary of Defense in the Joint Program Assessment Memorandum (JPAM). The CINCs provide their warfighting requirements to the Services during POM preparation. They also furnish their priority requirements to the Secretary of Defense and the Chairman, Joint Chiefs of Staff.

After POMs have been received in OSD, the staff prepares a set of potential issues, including alternatives where appropriate. Other issues are prepared by the CINCs and the Office of Management and Budget (OMB). Potential issues are presented to the Program Review Committee (PRC) which selects issues that will ultimately be decided by the Defense Planning and Resources Board (DPRB). The OSD staff then develops individual papers for the selected issues with input and assistance from the Services, OMB, JCS, and the CINCs. Each issue paper discusses the issue and provides alternatives. Finally, all issues are combined into eight issue books and circulated to other OSD offices, the JCS, the CINCs, and Services for review and comment before the issues are presented to the DPRB.

The DPRB meets for 2 to 3 weeks to resolve the issues, and the Service Chiefs attend as observers. The CINCs are invited to explain their concerns to the DPRB. The Deputy Secretary of Defense makes tentative decisions on each of the eight issue

books. After all books have been reviewed individually, a wrap-up meeting is held to evaluate the total effect of the tentative decisions on the DoD program. Any open issues are resolved and final decisions are made and recorded in a Program Decision Memorandum (PDM). The PDM is published about mid-July, which signals the end of the programming phase and provides the program and fiscal basis for developing the DoD budget estimate.

BUDGETING

Currently, each Service and Defense agency develops and forwards a biennial budget estimate to the Assistant Secretary of Defense, Comptroller [ASD(C)]. Those estimates include prior year, current year, budget year (first year of the FYDP), and budget year plus one (authorization year) data based on guidance contained in the Budget Guidance Manual, the PDMs, and the detailed annual budget guidance notices. The estimates are due in OSD in September. The Services and Defense agencies provide an amended budget submission in the off years. This submission describes changes resulting from the most current information.

Joint OSD and OMB hearings are scheduled by ASD(C) to review the budget submissions. The purpose of the hearings is to obtain additional information and to determine whether the Services and Defense agencies have complied with the guidance and have properly justified and accurately priced each submission. As hearings are completed, each responsible ASD(C) analyst prepares a draft Program Budget Decision (PBD). These draft PBDs evaluate and adjust resources in the DoD budget request to cover the current, budget, and authorization years, as well as the out years. After coordination with the OSD and OMB staffs, the Services and Defense agencies are given an opportunity to comment on the various issues and alternatives developed in the PBDs. The PBDs are then forwarded, with a list of major issues, to the Deputy Secretary of Defense who either selects one of the alternatives or directs a new one. The PBD is then signed and forwarded to the Services and Defense agencies.

Service and Defense agency reclamas[1] are submitted through the same channels and remaining major issues are addressed at a special session of the DPRB. Issues still unresolved may be referred to the Secretary of Defense, who may elect to

[1]A DoD-peculiar word probably taken from the Latin verb "reclamare," which means "to exclaim against."

seek the President's views before deciding all remaining issues. Once the decisions are made they are incorporated into the President's Budget for forwarding to Congress.

EXECUTION

The foregoing description of PPBS captures the classic elements of the process; however, most PPBS practitioners suggest that execution is an equally vital link in the process. Feedback on how funds are spent – and not spent – can exert as much influence on PPBS decision making as sophisticated planning schemes. Funds not obligated in a timely fashion, for example, send a signal to higher levels, including Congress, that perhaps the requirements defended in previous years were not as great as once justified. Programs supported within DoD, but rejected by Congress, require very careful scrutiny before being proposed again.

Execution feedback into the budget process is easier to achieve and more effective in its results, than is feedback into the planning and programming processes. Decisions made during budget development are closer in time to the execution cycle than are planning and programming decisions. Nevertheless, each phase of PPBS requires feedback from the execution process to ensure resources are being planned wisely.

Environmental issues have the potential to provide valuable feedback into the planning and resource decision processes. Programs encountering court injunctions because of neglect of environmental issues, for example, need to adjust their plans to fit within the reality of environmental constraints. To acknowledge and adapt to this reality during the planning process falls within the compliance requirements of NEPA. Lessons learned during execution must be incorporated into the feedback loop or decision makers risk having to learn the lessons again.

SERVICES' ROLES IN PPBS

As PPBS moves from broad and generalized information in the planning phase to more detailed data comprising programming and budgeting, the scope of involvement expands to lower levels of each Service organization. Field installations, for example, have little or no direct involvement in the planning issues debated at the OSD and JCS levels. They do, however, have a major role in preparing detailed budget estimates for manpower, supplies, and facilities required in the next

2 years. As those estimates are rolled up through the major commands and Service staffs, they lose detail but retain their baseline for allocation decisions after resources are apportioned from the annual appropriations.

Programming, the important link between planning and budgeting, is sometimes described as the allocation of resources under conditions of scarcity. The competition for credibility, funding, and even survival during the programming phase is intense. Programs are subject to cancellation, deferral, or being stretched out to fit within resource constraints.

Each Service conducts its programming processes somewhat differently owing to different organizations, missions, and philosophies. The Army and Air Force develop their programs within their major commands, which prepare program packages that propose to confirm or change existing programs in the FYDP.[2] Navy and Marine Corps programs are developed on a more centralized basis. The Chief of Naval Operations (OPNAV) assigns key deputies and directors of staff offices as resource sponsors who develop Sponsor Program Proposals (SPPs) to confirm or change Navy programs. Navy major claimants, such as the Fleet CINCs, are given opportunities to input programming issues to the resource sponsors, but the decision making is controlled at the OPNAV level. The staff of the Commandant of the Marine Corps also invites field input but maintains development of Marine Corps programs at its Washington Headquarters.

Each Service employs a system of boards, panels, or committees that oversees the programming process at the Service headquarters level. Typically, these groups are structured within comparable grade levels. Their function is to review programs, decide on lower level issues, and provide recommendations to the next senior level boards, panels, or committees. As programs proceed to the more senior levels, the issues remaining are usually more complex, and the amount of technical detail less visible. If a NEPA compliance issue was to surface during the programming process, it would most likely occur at the lowest level of review. A specialty panel, such as the military construction review committee, might become aware of a NEPA issue, since

[2]The packages identified as Management Decision Packages (MDEPs) in the Army and Program Decision Packages (PDPs) in the Air Force combine manpower, equipment, facilities, and funding into discrete packages that retain their identity through the programming and budgeting processes.

the engineering community through its facilities planning function keeps close tabs on NEPA implementation.

The identification of NEPA environmental issues during the PPBS process is not an easy matter. They fall within the support areas of other programs and rarely contain separate or specific funding requirements. There are opportunities to insert awareness of NEPA, however, through various PPBS guidance documents, participation with decision and review groups, and by making a concerted effort to learn of potential NEPA issues associated with each Service program and project. We recognize the appropriate time to implement NEPA occurs long before the resource decision process; however, no opportunity should be foregone to insert NEPA oversight, including the PPBS process.

APPENDIX D

COMMENTS ON NEPA COVERAGE IN DoD PUBLICATIONS

This appendix provides examples of DoD and Service publications that ought to convey the requirements of the National Environmental Policy Act (NEPA). They are representative of the instructions and guidance that help Government personnel include NEPA compliance in their decision making. The absence of specific NEPA references contributes to the failure of program managers, commanders, and other decision makers to implement NEPA requirements. In listing the publications, we use the following abbreviations: Air Force Manual (AFM); Air Force Pamphlet (AFP); Air Force Regulation (AFR); Army Regulation (AR); Chief of Naval Operations (OPNAV); Department of the Army Pamphlet (DA Pam); Department of Defense Directive (DoDD); Department of Defense Instruction (DoDI); Defense Logistics Agency (DLA); Naval Facilities Engineering Command (NAVFAC); Secretary of the Navy (SECNAV); and Technical Manual (TM).

DEPARTMENT OF DEFENSE

DoDD 3100.5, *Department of Defense Offshore Military Activities Program*, 16 March 1987

This DoDD sets out the policies and procedures for the use of offshore areas by components of the DoD. Since offshore activities can easily damage the environment, the potential environmental consequences of any activity should affect the decision to pursue that activity. However, nowhere in this DoDD is the environment mentioned. The most conspicuous absence of a stated concern for the environment is in the memorandum of agreement between DoD and the Department of the Interior on mutual concerns for the Outer Shelf. Section D on policy in this DoDD should include a policy statement about environmental protection, and the directive should require an environmental assessment (EA) for every offshore action not categorically excluded by DoDD 6050.1.

DoDD 4165.6, *Real Property Acquisition, Management, and Disposal*, 1 September 1987

The NEPA is included as one of many references in this fundamental directive on real property, but the text of the directive provides no other information on it. Paragraph 3h contains one of the few environmental cautions when it mentions the quality of the land relative to timber harvesting. The directive could be strengthened by referring to NEPA in Section D, *Policy*, and Section F, *Procedures*.

DoDD 4270.5, *Military Construction Responsibilities*, 2 March 1982

This directive establishes policies and responsibilities for the military design and construction program. It fails even to mention the environment. Paragraph E1 lists the responsibilities of the Assistant Secretary of Defense (Production and Logistics) and they are to "ensure the most efficient, expeditious, and cost-effective accomplishment of the program." The directive should be amended to explicitly add protection of the environment to that list.

DoDD 4275.5, *Acquisition and Management of Industrial Resources*, 6 October 1980

This DoDD establishes uniform policy governing the acquisition and management of facilities, special tooling, and special test equipment. In Section 11 on environmental considerations it states, "Environmental impact must be considered in the acquisition and management of industrial facilities, in accordance with DoD Directive 6050.1 [reference (o)]." Since the NEPA is covered in DoDD 6050.1, the reader is indirectly introduced to it. A direct reference to NEPA in this section would improve the chances that the decision maker would include it.

DoDD 4700.3, *Mineral Exploration and Extraction on DoD Lands*, 28 September 1983

Procedures for making DoD lands available for mineral exploration and extraction are contained in this DoDD. It states as policy that DoD lands "shall be made available for mineral exploration and extraction to the maximum extent possible consistent with military operations, national defense activities, and Army civil works activities." It should also state that the availability should be consistent with protecting the environment. The procedures in DoDD 4700.3 state that the agency issuing permits is to make any required environmental and cultural studies,

but the Military Department shall decide whether and under what circumstances its land may be made available for leasing. The DoD should amend the DoDD to clearly state that those circumstances include a favorable environmental impact statement from the agency issuing the permits.

DoDD 5000.1, *Major and Non-Major Defense Acquisition Programs*, 1 September 1987

DoDD 5000.1 and DoDI 5000.2 set the policies, practices, and procedures for major and nonmajor defense acquisition programs. They describe the system of acquisition program milestones and the roles of the Defense Acquisition Board and Committees. Although DoDD 5000.1 is the governing directive, DoDI 5000.2 is more detailed and provides a greater opportunity to address NEPA. NEPA, however, should also be addressed in Section D, Paragraph 9 of DoDD 5000.1, which discusses the need for a tailored acquisition strategy as one way to enhance acquisition program stability. That paragraph requires logistics supportability requirements to be established early in the acquisition process and be considered in the formulation of the acquisition strategy. Because forgetting the environment can easily destabilize an acquisition's timetable, the directive should explicitly state that environmental impacts must be assessed as part of that acquisition strategy.

DoDI 5000.2, *Defense Acquisition Program Procedures*, 1 September 1987

This instruction is the second of the two publications (with DoDD 5000.1) that cover defense acquisitions. It does not address the NEPA requirements, but it provides a major vehicle for formalizing how environmental consequences are to be included in the acquisition decision process.

The first opportunity to address environmental considerations is in Paragraph C of the DoDI. It defines "operational suitability" as the degree to which a system can be placed satisfactorily in field use considering among other factors: availability, compatibility, maintainability, safety, human factors, manpower supportability, logistics supportability, documentation, and training requirements. Environmental impact should be added to that list because the need to mitigate that impact may increase an acquisition's cost or delay its deployment and thereby affect its operational suitability.

The description of each milestone in Paragraph D provides additional opportunities to make environmental impact part of the consideration. In the definitions for Milestone 0 and Milestone I, a primary consideration is given as affordability and life-cycle costs. The words "including environmental costs" should be added. Primary considerations for Milestone II include manpower, personnel, training, and safety assessments. Again, EAs should be added. Similar additions should be made to the definitions for the other milestones.

In Paragraph E on procedures, the numbers and types of component staff briefings are prescribed. The Assistant Secretary of Defense (Production and Logistics) is to be briefed on the acquisition strategy and the transition from development to production or construction planning. As a minimum, the list should be expanded to include environmental management planning. Better yet, another component staff briefing on the environmental plan should be added for the Deputy Assistant Secretary of Defense (Environment).

The documentation instructions in Paragraph F for the various milestones should also address the NEPA requirements. The mission need statement (MNS) must be prepared for Milestone 0, and its format is prescribed in Enclosure 3 of the instruction. Paragraph 7 of the format must address constraints on the acquisition including logistics support, manpower, personnel, training, and safety constraints. Environmental constraints should be added to that list. Similarly, Enclosure 4 of the instruction prescribes the System Concept Paper (SCP), which must be prepared for Milestone I, and the Decision Coordinating Paper (DCP), which must be prepared for Milestones II, III, IV, and V. They must include acquisition strategy (Paragraph 10) and environmental planning should be explicitly required as part of that strategy.

DoDD 5000.39, *Acquisition and Management of Integrated Logistics Support for Systems and Equipment*, 17 November 1983

This directive states in its policy statement that system readiness is a primary objective of the acquisition process and that the resources necessary to achieve readiness include those for designing support characteristics into systems and equipment as well as those to develop the support. That support often includes environmental mitigation, which should be added to the list in Paragraph D of the directive. Paragraph E2 describes the basis for early integrated logistics support. Environmental planning should also be mentioned in that paragraph.

DoDD 6050.1, *Environmental Effects in the United States of DoD Actions*, 30 July 1979

This directive serves as the DoD's NEPA implementing instructions required by the Council on Environmental Quality (CEQ) regulations. Its weakness lies in its list of actions categorically excluded from the requirement for an EA or environmental impact statement. That list allows the DoD Components to include in their implementing directives any categories not already on the DoD's list. That provision has allowed the Services to expand the list of categorical exclusions until it excludes many actions that should, in fact, be subject to EAs. The DoD should rescind the provision and provide a comprehensive list of categorical exclusions that apply to all DoD Components.

Since this directive is DoD's main guidance on NEPA, it should be referenced in all of the DoD publications that provide decision makers with guidance that can impact the environment.

DoDD 7054.14, *The Planning, Programming and Budgeting System (PPBS)*, 22 May 1984

This directive establishes policy and procedures for the PPBS. The policy statement in Paragraph C states that the PPBS establishes the process of decision making on future programs and permits prior decisions to be analyzed from the viewpoint of the current political, technological, and economic environment. However, the natural environment is not included in the list and it should be added. Under Paragraph D on procedures, the DoDD directs that the nation's military role shall be examined considering two factors: the national security objectives and the need for efficient management of resources A third factor should be added: protection of the environment. That addition is consistent with the Secretary of Defense's policy of placing environmental protection high on the list of DoD priorities.

ARMY

AR 5-10, *Reductions and Realignment Actions*, 26 August 1977

This regulation governs actions involving reductions of personnel and manpower spaces and installations and activity realignments within the Army. It is a good example of how NEPA requirements can be included in decision-making

guidance. Paragraph 3-5 and Appendix D provide details of the environmental documentation needed.

DA Pam 5-25, *Army Modernization Information Memorandum (AMIM)*, 1 April 1985

The AMIM is used by Army headquarters and major commands for planning, programming, and budgeting resources to operate and support the fielding of new and displaced equipment. It is a primary source for reviewing of force modernization program and budget submissions, both of which involve decisions that have high potential for environmental impacts. Chapter 2 of the pamphlet includes the data needs of a major command receiving a new weapon system or other equipment. The list includes training and doctrine, supply, transportation, and maintenance requirements, but environmental hazards or mitigation requirements are only mentioned in passing. These data needs should be included to ensure that such information is passed on to the field. The only mention of environment is in the context of facilities' technical requirements along with the requirements for hardstands and power receptacles. Environmental issues are not restricted to facilities and the need to know about possible environmental consequences should be generalized and made far more prominent in the regulation.

The regulation has a chapter for each system the Army fields, and each chapter provides detailed information on the system's requirements. Only rarely are environmental requirements mentioned, however. For example, Chapter 293 covers the requirements to field an Arctic Fuel System Supply Point, A718, but does not mention environmental requirements, precautions, or mitigations needed for the system. All of these chapters should be reviewed to ensure that environmental needs are addressed.

TM 5-630, *Natural Resources Land Management*, July 1982

This is a joint-Service publication that covers the Services' management of natural resources. Paragraph 3-1.2 requires that an installation's natural resources management plan include an EA. The regulation should also require that the plan be made part of the installation's master plan. We have recommended that an EA be required for the entire master plan, in which case it would be combined with the EA required by this document.

AR 71-9, *Materiel Objectives and Requirements*, 20 February 1987

This AR covers policies for acquiring material systems and training devices. It is a good example of a document that covers NEPA requirements well. In Paragraph 4-6 on environmental impact, it states, "All proposed actions under this regulation must be assessed for environmental impact to ensure compliance with AR 200-2. All environmental documents will be submitted with other decision documents for review, and will be coordinated with all concerned Federal, state, and local agencies prior to approval."

AR 200-1, *Environmental Protection and Enhancement*, 15 June 1982

This regulation covers the Army's various environmental programs such as noise abatement and water resources management. NEPA is specifically mentioned in Paragraph 1-7. In the assignment of responsibilities in Paragraph 1-6, however, NEPA should be added to the list under each position. For example, NEPA is not mentioned in the decision-making responsibilities for major command commanders and state adjutant generals.

AR 350-28, *Army Exercises*, 2 July 1985

This regulation presents the Army's policy guidance for exercises. It includes NEPA in the guidance and specifically requires EAs and environmental impact statements (EISs). The only suggested addition is in Paragraph B-4k, which states, "A safety plan will be developed to minimize Army and non-Army injury and property damage." That paragraph is a good place to add the requirement to develop an EA and thus reinforce the requirement.

AR 350-41, *Army Forces Training*, 26 September 1986

In this guidance on training, NEPA requirements are not specifically mentioned. Paragraph 4-4 states, "Good training complies with current doctrine, is well structured, efficient, effective, realistic, and safe." It should add that good training is also designed to minimize environmental impacts. Chapter 2 assigns responsibilities, but no one is given the responsibility for environmental protection or mitigation.

AR 405-10, *Acquisition of Real Property and Interests Therein*, 1 August 1970

This regulation covers the acquisition of real property, maneuver agreements, leaseholds, and easements. The requirement to make an EA for these decisions should be added since the Army should be especially careful to avoid acquiring land that already has environmental problems such as buried toxic wastes.

AR 405-30, *Mineral Exploration and Extraction*, 15 August 1984

Army policy on mineral exploration and extraction is provided in this regulation. The policy is to relinquish responsibility for following NEPA requirements on this issue to the Bureau of Land Management (BLM). Paragraph 4c(2) states that major commands will furnish available environmental and cultural information to the BLM on request. If DoD is to be a leader in environmental issues, however, it needs to seize back the initiative in this area. AR 200-1 and AR 200-2 should be added to the list of required and related publications in Paragraph 2. Moreover, Paragraph A-36 states that an installation commander may order an immediate cessation of activities he finds present an imminent danger to safety or security. The Army should add danger to the environment to that list.

AR 415-10, *Military Construction - General*, 1 April 1984

The Corps of Engineers is assigned responsibility for complying with environmental legislation during construction. Coverage of NEPA requirements in this AR is good.

AR 415-15, *Military Construction, Army (MCA) Program Development*, 1 January 1984

This AR is a good example of NEPA coverage. It explains what NEPA documents are needed and why they are needed.

NAVY

SECNAV Instruction 5000.1C, *Major and Non-Major Acquisition Programs*, 16 September 1988

This broad instruction describes the organization and responsibilities for Navy acquisitions and achieves consistency with OSD acquisition policies. Oversight of

environmental management issues is considered part of the Integrated Logistics Support (ILS) function that is assigned to the Assistant Secretary of the Navy for Shipbuilding and Logistics [ASN(S&L)]. That assignment will change with the establishment of the ASN for Installations and Environment [ASN(I&E)]. Under the discussion of policy in Paragraph 5, environment should be included for consideration in the program review meeting. Such inclusion would increase awareness of NEPA regulations.

OPNAV Instruction 5000.49, *Integrated Logistics Support in the Acquisition Process*, 30 January 1987

Responsibilities, procedural steps, and definitions are included in this instruction governing the role of ILS in acquisition. The introductory statements emphasizing the relationship of decisions in the early stages of design to the support process are particularly effective. The description of the ILS manager as the individual holding primary responsibility for the logistics program could be expanded to identify his responsibility for environmental protection. The description of phased support in Enclosure 5 of the instruction could include the need to consider environmental impacts before undertaking the facility planning function in Milestone I. Re-enforcement of that point in preparation for Milestone II would also be appropriate. The definition of the facilities management plan in the glossary of Enclosure 7 should be expanded to include the concept of environmental compatibility.

OPNAV Instruction 5090.1, *Environmental and Natural Resources Protection Manual*, 26 May 1983

This instruction prescribes the basic policies and procedures for conducting the Navy's environmental and natural resources protection program. It is being substantially revised consistent with guidance from the CEQ and OSD. Thus, we have not included a review of the instruction.

SECNAV Instruction 5420.188B, *Navy and Marine Corps Program Decision Meetings*, 17 January 1989

Program Decision Meetings (PDMs) are the forums used by the Department of the Navy to decide whether Navy and Marine Corps acquisitions are suitable to proceed to the next acquisition milestone. This instruction prescribes the procedures for the meetings and includes an objective of streamlining the decision process.

Enclosure 1 provides guidance for materials required at these meetings and should include environmental concerns as part of Milestone I, the beginning of the demonstration and validation phase.

OPNAV Instruction 5450.169D, *Establishment, Disestablishment, or Modification of Shore Activities of the Department of the Navy,* 20 April 1982

This document sets policy and prescribes the steps to change missions for shore activities. It emphasizes the need to be sensitive and handle with care information relating to decisions on changing the shore activity structure. This document does not take advantage of the many opportunities it has to increase environmental awareness; for example, the text of Paragraph 5 (c) states, "... commands proposing the action will program for costs... including MILCON (military construction), manpower, and ceilings, facility requirements...." The instruction should have included environmental costs in that listing. In Paragraph 7, factors to be considered in establishing shore activities should include a separate factor for environmental considerations.

OPNAV Instruction 5450.187, *Economic Adjustment Assistance to Defense Impacted Communities,* 19 March 1974

This instruction implements DoDD 5410.12 of 21 April 1973 covering the same subject and assigns the Deputy Chief of Naval Operations for Logistics (OP-04) as the Navy policy focal point. Economic impacts are included within the broad context of NEPA. No change is recommended.

SECNAV Instruction 6240.6E, *Department of the Navy Environmental Protection and Natural Resources Management Program; Assignment of Responsibility for,* 18 August 1977

This instruction provides broad policy and assigns responsibility to the Navy and Marine Corps for the protection of the environment and conservation of natural resources. An early reference to NEPA includes a brief discussion of the need to build awareness of environmental factors into the decision-making process at the inception of plans and programs. The requirement to prepare EISs is also stressed. However, filing with the CEQ is accomplished through the Environmental Protection Agency (EPA), rather than directly with CEQ. The instruction requires updating.

SECNAV Instruction 6240.10, *Evaluation of Environmental Effects in the United States from Navy Actions,* 4 December 1980

This instruction directs the Navy to implement NEPA procedures as established by CEQ regulations. It could present a more positive approach if it stressed the benefits of compliance with NEPA. Some of the exclusions, such as reductions in the work force and land and facility transfers to other agencies, when the General Services Administration (GSA) is the transfer agent, are no longer appropriate.

NAVFAC Instruction 11010.14Q, *Project Engineering Documentation (PED) for Proposed Military Construction Projects,* 4 May 1988

This instruction presents guidelines for preparing and submitting data in support of MILCON projects during the budget review process. It emphasizes complete design analysis and stresses the need for accurate data. It makes some weak references to the need for environmental consideration in PED preparation; those references should be strengthened. The block, "Environmental Impact," at Attachment 2 of Enclosure 1 requires certification that an EA or EIS has been prepared and shows a significant (or insignificant) impact. NEPA should be referenced to highlight the source of this requirement, which could be explained in the guidance in brief form. Paragraph 11 seems an appropriate place to develop this background as part of the "Design Solution Validation."

OPNAV Instruction 11010.20E, *Facilities Projects Manual,* 9 July 1985

This manual provides detailed guidance for the administration of acquisition, construction, repair, and maintenance projects for real property at all shore activities of the Department of the Navy. It fails to provide any guidance on the need to consider environmental consequences in the preparation of facilities projects probably because it is preoccupied in designing project categories, decision authorities, and submission procedures. Nevertheless, in Chapter 4, which covers repair projects, a recent change addressing properties of "historic or cultural significance" highlights one specific facet of environmental consideration. Broader reference to environmental consideration is warranted in the policy discussion segments of this manual.

NAVFAC Instruction 11010.44E, *Shore Facilities Planning Manual,*
15 December 1987

This instruction explains the process used for planning shore facilities and provides detailed guidance on preparing documents for project and site approvals. Although this manual is the Navy's primary reference for planning facilities, it contains only brief references to the environmental consequences of inadequate planning. When contrasted with the extensive criteria devoted to explosive safety in Chapter 10, the consideration given to NEPA requirements appears even more minuscule. A thorough review of the planning manual will reveal a number of opportunities for improving NEPA awareness.

OPNAV Instruction 11011.10E, *Utilization of Navy Land,*
25 September 1986

Procedures to be followed in developing the Navy Land Utilization Analysis and the Annual Documentation of Navy Land Utilization Report are prescribed in this instruction. Its thrust is to validate the continuing requirement for Navy land. If the land is "not utilized, underutilized, or not being put to optimum use," it is to be declared excess or its retention must be justified. The Navy Land Utilization Analysis is incorporated as a chapter in the installation master plan. The instruction requires that conservation and contamination areas be identified in the analysis. It should give examples of the types of environmental factors that must be considered in the event that some Navy land is declared excess.

AIR FORCE

AFR 19-2, *Environmental Impact Analysis Process (EIAP),*
10 August 1982

This regulation provides specific instructions for implementing NEPA. Its main text is only seven pages long, and it offers guidance on NEPA by referring to the CEQ NEPA regulations, which are attached to it. Thus, the regulation misses an excellent opportunity to make the CEQ regulations more relevant to Air Force decision makers and therefore more likely to be followed. For example, Paragraph 8 on tiered and generic environmental documents is only seven lines long and directs the user to consult with Headquarters USAF when tiering or when the use of a

generic EIS is considered. On the contrary, the regulation should encourage the use of tiered EISs and give examples of how they can be useful.

The preliminary environmental survey (Air Force Form 814) authorized by the regulation is a good concept. The survey would be more timely, however, if a program proponent was required to complete the form instead of referring it to an environmental planning function.

AFR 57-1, *Operational Needs, Requirements, and Concepts,* 7 October 1988

This regulation is the Air Force's internal policy to implement the Defense Acquisition Program. A statement of operational need (SON) is prepared to meet Milestone 0 and, among other things, it furnishes preliminary requirements for operations and maintenance activities. Paragraph 2a(2) lists the information to be included in a SON. That information includes manpower, personnel, training, human factors, and operational security to ensure their early integration into the acquisition process. The Air Force Regulation should be amended to add environmental protection to that list. The environmental information prepared for the SON could then be used as the basis for an EA or the first tier of an EIS.

Before Milestone I, the operating command must develop the system operational requirements documents (SORDs), which are then updated before each succeeding milestone. The SORD explains how to operate, employ, deploy, and support the proposed system and is another place in which environmental considerations should be documented. Attachment 6 of the AFR specifies the SORD format and touches on environmental matters in Paragraph 4.a.(1)(f). The SORD, however, requires only that a preliminary study of hazardous waste generated through the project's life be conducted and that impending environmental legislation be considered. NEPA requires much more of the decision makers and the NEPA requirements should be explicitly and prominently stated in this regulation.

AFR 86-1, Vol. I, *Programming Civil Engineering Resources,* 7 May 1984

This AFR offers guidance on MILCON, and it requires that project documentation includes an environmental certificate giving the status of the NEPA-required documentation. This regulation is a good example of one that provides good NEPA coverage.

AFP 86-7, *Land Use Planning*, 15 March 1988

This pamphlet makes some reference to environmental protection but does not specifically mention the requirements of NEPA. For example, in Paragraph 2.C, land use planning goals and objectives include integrating a variety of environmental, historical, and technical data into a cohesive and practical land use plan. NEPA would be better served if a tiered EIS were to be described in Paragraph 2.C. The most significant problem, however, is the glaring omission of environmental protection and environmental management from Paragraph 2.B, which lists the Air Force's seven goals for base comprehensive planning.

AFR 87-9, *Mineral Exploration and Extraction on Air Force Lands*, 27 April 1984

The only mention of the environment in this regulation is in Paragraph 3c(5), which states that major commands should furnish available environmental and cultural information to the BLM upon request. If DoD is to be a leader in environmental issues, however, the Services must insist on a deeper involvement in the preparation of EISs for mineral exploration or extraction. Simply supplying some information if requested is not enough.

AFR 87-22, *Utilization and Retention of Real Property*, 29 March 1989

This regulation establishes policies and procedures for conducting studies to ensure that the Air Force retains only property needed for its military mission. It also establishes criteria and format for utilization surveys and studies. Chapter 2 lists 10 responsibilities of an installation in this area, but NEPA is not among them. The environment is not mentioned although it may well help to decide the use and disposition of real property. In Chapter 5 on responsibilities for disposal surveys, the environment is not mentioned even though an EIS might be needed. Attachment 3 lists 17 questions to ask about real property usage but, again, none of them addresses the environment or NEPA. Since environmental issues are a growing part of the decision making involved in the use, retention, and disposal of real property, they should be addressed in this regulation.

AFM 126-2, *Natural Resources Land Management*, July 1982

This Air Force manual is a joint-Service publication and its contents are described in the Army section under TM 5-630 on page D-6.

DEFENSE LOGISTICS AGENCY

DLA Reg. 1000.22, *Environmental Considerations in DLA Actions in the United States*, 1 June 1981

This regulation presents DLA's NEPA-implementing policy and it is quite specific and detailed. For example, it charges the Staff Director, Installation Services and Environmental Protection, with monitoring all DLA-proposed decisions that have environmental implications to ensure that environmental considerations are integrated into the decision-making process. The regulation lists examples of actions subject to NEPA as well as those categorically excluded.

APPENDIX E

ENVIRONMENTAL INFORMATION SERVICES

This appendix presents examples of databases that DoD can use to support the preparation of environmental impact statements (EISs). A thriving industry is centered around the preparation, storage, and dissemination of environmental information. The University of Illinois, in collaboration with the U.S. Army Construction Engineering Research Laboratory (CERL) at Urbana, Ill., maintains a listing of more than 400 databases that provide environment-related information.

Information available in those databases ranges from natural resources, toxic compounds, geology, and agriculture to economic data. A large portion of the data is extracted from professional journals in selected subject areas. The data are, for the most part, managed by firms that use extensive data processing facilities and offer a variety of media to satisfy customer requirements. Governments, both state and Federal, play major roles as users and generators of the data.

INFORMATION CATEGORIES

Based on our sampling of the databases listed by the University of Illinois and CERL, we grouped them into four categories: natural resources; hydrologic/ geological resources; chemical, toxics, and agricultural information; and environmental administration.

Natural Resources

The largest source of natural resources information is a program sponsored by the Nature Conservancy in cooperation with state governments and agencies. The Conservancy, a major conservation organization, specializes in ecological data management and in preservation of natural lands, including endangered species' habitats, scientific research sites, native ecosystems, and critical areas benefiting the environment.

All 50 states have now established Natural Heritage Programs in conjunction with the Nature Conservancy. Centers have also been established at 11 sites

overseas to collect natural resources data, and a few agencies, such as the Tennessee Valley Authority, have established programs to supplement the state programs. The Conservancy is encouraging other agencies, such as the Park Service and Department of Defense, to establish their own programs to augment data collected by the state Natural Heritage Programs. The natural resource databases are continually updated, on the basis of sitings and mapping of locations of rare or endangered species of plants and animals. Information is shared among programs to formulate a broad basis for assessing the existence and range of species. Information available to the public is usually provided with map coordinates for location reference.

States and other agencies maintain extensive wildlife information in addition to the data collected by the Natural Heritage programs. Wetlands information is compiled by the National Wetlands Inventory (NWI), a georeferenced wetlands database using geographic information systems. This system is being developed in conjunction with the U.S. Fish and Wildlife Service, which has developed a hierarchical classification of wetlands. To date, 4,600 maps representing 8.5 percent of the continental United States are available in digitized format. The Department of Defense is working closely with the NWI to include Defense lands in the inventory. The Council of State Governments, in concert with the Environmental Protection Agency (EPA), also provides information on wetlands. Information in this database includes points of contact in each state government and a summary of each state's program.

The National Marine Fisheries Service, under the National Oceanic and Atmospheric Administration (NOAA), maintains extensive data on fisheries of the United States. BIOSIS, a large commercial producer of biological databases, publishes the *Zoological Record*, a comprehensive index to zoological literature. These are but a few examples of the many types of natural resource databases available.

Hydrologic/Geological Resources

The U.S. Geological Survey (USGS) manages an extensive volume of data on surface and subsurface water. The National Water Data Exchange (NAWDEX) is a national confederation of water-oriented organizations that work together to improve access to water data. Sixty assistance centers are networked to exchange water data.

The USGS maintains the Master Water Data Index (MWDI), which contains meteorological data from more than 450,000 sites. MWDI is updated annually from site information provided by the water data storage and retrieval system (WATSTORE) and EPA's storage and retrieval system (STORET). USGS also manages the Water Resources Scientific Information Center, an organization that acquires, abstracts, and indexes the major water literature of the world. The American Water Works Association maintains a database titled *WATERNET*, a comprehensive index of publications related to drinking water and wastewater.

Localized information on specific natural areas is also available. For example, the Coast of California Storm and Tidal Waves Study (CCS TWS) includes a database of current literature on that subject. Many regions of the country collect data for areas exhibiting similar natural characteristics, i.e., deserts, lakes, grazing lands, or forests. Geographic databases are maintained by most states in the form of digitized maps that provide detailed information on soils, land use, flood plains, zoning, and various boundary data such as watersheds, traffic zones, water and sewer service areas, census tracts, and political jurisdictions.

Chemical, Toxics, and Agricultural Information

The Chemical Information System (CIS) is a collection of computerized data storage and retrieval components for chemical information. Developed under contract with EPA and the National Institutes of Health, the CIS contains one of the world's largest sources of on-line chemical information. It comprises 40 components that can be accessed interactively. The Registry of Toxic Effects of Chemical Substances (RTECS) and Chemical Hazard Response Information System (CHRIS) are components of the CIS that contain important environmental data.

The Institute of Paper Science and Technology maintains a database titled *PAPERCHEM* available through one of the database subscription services known as DIALOG. Although focused on the entire paper-making industry, the database contains separate data systems for subjects including forestry, pulpwood, spent liquors, and pollution control.

The National Agricultural Library, a component of the U.S. Department of Agriculture, maintains the Agricultural On Line Access (AGRICOLA) and Current Research Information System (CRIS) databases. AGRICOLA compiles over

2.6 million bibliographic citations, and CRIS documents ongoing publicly supported agricultural and forestry research in the United States.

Environmental Administration

Cambridge Scientific Abstracts, a division of the Cambridge Information Group, publishes a summary of all draft and final EISs filed with the EPA each year. Appendix A provides summary information on the EISs submitted by Defense Components in 1987 and 1988.

The National Technical Information Service (NTIS) is one of the most extensive bibliographic search services available. It provides access to the results of United States- and foreign government-sponsored research, development, and engineering. It is accessible through DIALOG and seven other database vendors. Information, such as records of decisions (RODs) can be found in the NTIS system.

The Environmental Technical Information System (ETIS) prepared by the Department of Urban and Regional Planning, University of Illinois, is a collection of systems designed to assist planners and decision makers in making more informed decisions. It consists of three primary systems:

- Economic Impact Forecast System (EIFS)
- Computer-Aided Environmental Legislative Data System (CELDS)
- Soils Systems (SOILS).

The NOAA maintains a database of ocean pollution information based on data generated by 11 participating Federal Departments and agencies.

REFERENCES

In the following subsections, we present a representative list of information sources in the four environmental information categories on the basis of the responses received to our queries from various agencies and firms.

Natural Resources

- *State Natural Heritage Programs* – sponsored by the Nature Conservancy
  - The attachment to this appendix presents a directory of all state Natural Heritage programs, including titles, addresses, and points of contact.
  - Generally, information from the state Natural Heritage programs can be obtained at no cost.
  - The computerized systems provide information on the status and distribution of exemplary natural communities, rare and endangered plant and animal species, and special geologic features within the state. The program is intended to provide a comprehensive system integrating the processes of ecological inventory, data management, analysis, and environmental review with the establishment of land protection priorities.
- *National Wetlands Inventory (NWI)*
  - U.S. Fish and Wildlife Service
    Room 400 Arlington Square
    18th & C Streets, N.W.
    Washington, DC 20240
    Phone: (813) 893-3873.
  - $25.00 for magnetic tape covering a quad; other data available at cost.
  - The goal of NWI is to provide a single, universally applicable system of wetlands information which describes all wetlands on an individual or cumulative basis in terms of their ecological and physical characteristics, geographic location, and natural resource values.
- *WETLANDS*
  - The Council of State Government
    The Center for the Environment and Natural Resources
    P.O. Box 11910, Iron Works Pike
    Lexington, KY 40578
    Telephone: (606) 252-2291.
  - Cost is free the first year.
  - Phone line access to database requires contacting the Center to get a username and password.
  - The database includes information about each state's wetland protection program and a list of state officials associated with the program. Data were initially gathered by EPA and are now maintained by the Center.

- *Fishery Statistics Data*

  - U.S. Department of Commerce
    National Oceanic and Atmospheric Administration
    National Marine Fisheries Service
    Fisheries Statistics Division
    Silver Spring, MD 20910

  - Cost is free unless extensive programming is required.

  - Data are archived in central mainframe database management system. Information is available in periodic reports and a personal computer (PC) bulletin board.

  - Commercial fisheries data by species, value, and size of catch, by state and other location references.

- *California Wildlife Habitat Relationships (WHR) System*

  - State of California Resources Agency
    Department of Fish and Game
    1701 Nimbus Road
    Rancho Cordova, CA 95670
    Telephone: (916) 355-0124.

  - On-line access not available; however, data are available in various formats. Contact the agency for details.

  - WHR is an example of a regionally specific wildlife database. It describes the management status, distribution, life history, and habitat requirements of California wildlife species. It also provides predictive models that may be used by biologists, land managers, and planners to describe the values of all of California habitats to California terrestrial vertebrates.

- *Zoological Record (ZR)*

  - BIOSIS
    2100 Arch Street
    Philadelphia, PA 19103-1399
    Telephone: (215) 587-4800 or (800) 523-4806 to order.

  - Cost is $2,060 for full volume.

- A scientific indexing service published in hard copy.

  (Also available in computer version through BIOSIS Marketing and Distribution Division.)

- ZR is published jointly by BIOSIS, a commercial database vendor, and the Zoological Society of London and monitors over 6,000 journals, magazines, books, and conference proceedings. The data cover any document with the biology of an animal or groups of animals as its focal point.

Hydrologic/Geological Resources

- *Master Water Data Index*

  - National Water Data Exchange (NAWDEX)
    U.S. Department of the Interior
    Geological Survey
    421 National Center
    Reston, VA 22092
    Telephone: (703) 648-5663.

  - Accessed through remote job entry (RJE) batch processing.

  - No charge except for computer charges plus 5.5 percent processing fee.

  - MWDI is a nationwide index of more than 450,000 sites that collect surfacewater, ground water, and limited meteorological data. MWDI is updated annually using information from the U.S. Geological Survey (USGS) WATSTORE and EPA's STORET. Through its Water Resources Scientific Information Center, the USGS also publishes *Selected Water Resources Abstracts*, a monthly journal. Access to these data are through the commercial firm, National Information Services Corporation, at an annual subscription rate of $595, Telephone (301) 454-8040.

- *WATERNET*

  - Produced by the:
    American Water Works Association
    6666 West Quincy Avenue
    Denver, CO 80235
    Telephone: (303) 794-7711.

- Available through the commercial firm, DIALOG Information Services Inc. On-line connect time is billed at a rate of $80/hour. The telecommunications charge is $6 to $12/hour.
- WATERNET is a comprehensive index of publications related to drinking water and wastewater. The file data are updated bimonthly.

- *Earth Science Data Directory (ESDD)*
- *GEOINDEX*
- *USGS Library*
  - USGS databases available through:
    Online Computer Library Center, Inc. (OCLC)
    6565 Frantz Road
    Dublin, OH 43017-0702
    Telephone: (614) 764-6287.
  - Uses compact disc-read-only memory (CD-ROM) discs.
  - Annual subscription for all three databases is $750.
  - The ESDD database provides a computerized catalog of information on existing print and earth science and natural resources data sources. The GEOINDEX contains over 18,000 citations to USGS and other sources of published maps of the United States and its territories. The USGS Library database is a comprehensive core collection of materials pertaining to all areas of earth science.
- *Coast of California Storm and Tidal Waves Study Bibliography*
  - U.S. Corps of Engineers
    Attn: CCSTWS Project Manager
    Coastal Resources Branch
    SPL-PD-CS
    P.O. Box 2711
    Los Angeles, CA 90053-2325
    Telephone: (213) 894-5170.
  - This microcomputer database contains more than 2,300 coastal references for California. It is an example of a regional database compiled for a specific purpose – coastal data.

Chemical, Toxics, and Agricultural Information

- *Registry of Toxic Effects of Chemical Substances*
  - *U.S. National Institute of Occupational Safety and Health* – available as an on-line service through:
    Chemical Information Systems, Inc.
    7215 York Road
    Baltimore, MD 21212
    Telephone: (301) 321-8440 or (800) CIS-USER hotline.
  - This database contains information for some 96,000 compounds. RTECS can be used to display information about particular chemical substances, including a quantified summary of published toxicity, mutagenicity, and carcinogenicity.
- *Hazardous Materials Handling and Disposal*
  - Data produced by the U.S. Coast Guard.
  - Available through CIS (see RTECS).
  - Provides information needed to respond to emergencies that occur during the transport of hazardous materials and for the design of safety procedures aimed at preventing emergency situations.
- *Agricultural On Line Access (AGRICOLA)*
  - Produced by the National Agricultural Library, the U.S. Department of Agriculture
  - On-line access is available through:
    DIALOG Information Services, Inc.
    3460 Hillview Avenue
    Palo Alto, CA 94304
    Telephone: (800) 3-DIALOG or (518) 858-3810
    or
    BRS Information Technologies
    1200 Route 7
    Latham, NY 12110
    Telephone: (800) 345-4277 or (518) 783-1161.
  - AGRICOLA is a bibliographic database consisting of records for literature citations of journal articles, monographs, theses, and technical reports related to all aspects of agriculture.

- *PAPERCHEM*

  - Produced by the Institute of Paper Science and Technology
    575 14th Street, N.W.
    Atlanta, GA 30318
    Telephone: (404) 853-9500.

  - Available through DIALOG Information Services, Inc. (see AGRICOLA).

  - This on-line file is a comprehensive database covering literature related to pulp and paper technology and includes related subjects such as the chemistry of cellulose, forestry, pollution, water, and power.

Environmental Administration

- *EIS CUMULATIVE*

  - Produced by:
    Cambridge Scientific Abstracts
    7200 Wisconsin Avenue
    Bethesda, MD 20814
    Telephone: (301) 961-6750.

  - Available in hard copy.

  - Annual subscription – $335.

  - Compiles abstracts of all draft and final EISs filed with the EPA monthly and cumulatively for each year.

- *National Technical Information Service*

  - Produced by:
    U.S. Department of Commerce
    National Technical Information Service
    5285 Port Royal Road
    Springfield, VA 22161
    Telephone: (703)487-4650.

  - Available through DIALOG as on-line or CD-ROM.

  - Cost for reports in hard copy or microfiche range from about $7.00 to $76.00, depending on the report being ordered from NTIS. Data diskettes and tapes range from $50 to $2,000. Contact DIALOG for prices for on-line access.

  - The NTIS provides access to the results of U.S.- and foreign government-sponsored research and development and engineering activities. It is the U.S. Government's central technical and scientific information service. Broad in its coverage, it received more than 13,000 R&D input items

from DoD in 1988. Included in the 1,900 items received from EPA were the RODs for filed EISs.

- *National Register Information System (NRIS)*

  - Produced by:
    U.S. Department of the Interior
    National Park Service
    P.O. Box 37127
    Washington, DC 20013-7127
    Telephone: (202) 343-5726.

  - On-line access for Federal and state preservation offices; others can receive hard copy of name and locational data on all National Register listings.

  - The NRIS includes administrative, locational, descriptive, and significance information on all National Register of Historic Places listings and owner objection determinations of eligibility. NRIS contains data on more than 54,000 National Register listings and approximately 9,000 eligible properties.

- *Environmental Technical Information System*

- *Economic Impact Forecast System*

- *Computer-Aided Environmental Legislative Data System*

- *Soils System*

  - Developed by the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory, Urbana, Ill.

  - Produced and maintained by:
    Department of Urban and Regional Planning
    University of Illinois at Urbana-Champaign
    1003 West Nevada Street
    Urbana, IL 61801
    Telephone: (217) 333-1369.

  - On-line access and staff search assistance available.

  - Costs: $200 subscription fee $90/hour connect time.

- ETIS is a collection of systems to assist planners and decision makers. EIFS, CELDS, and SOILS are the three primary subsystems of ETIS. Those systems are described further:
  - EIFS provides selected statistics for socioeconomic characteristics of any county or multicounty area in the United States and an analytical process for assessing the impacts of proposed actions.
  - CELDS is an on-line database of environmental regulations covering all areas of environmental concern ranging from air quality, solid waste, toxic substances, to storage of explosives. CELDS is updated twice monthly and includes permitting procedures and standards and numerical criteria.
  - SOILS is a family of databases accessing data for more than 16,000 soil series and over 175,000 soil mapping units. The USDA Soil Conservation Service is the original source of soils data.

- *Bureau of National Affairs (BNA) Environment Daily*
  - Produced by the Bureau of National Affairs
    1231 25th Street, N.W.
    Washington, DC 20037
    Telephone: (800) 862-4636 or (202) 452-4132.
  - Available on-line through various commercial vendors.
  - Full text database with daily updates, this service reports on Federal, state, and private-sector developments affecting pollution control and environmental protection. The database also serves as a source for monitoring the Federal Register and digests of cases to be published in the Bureau of National Affairs' Environmental Reporter Cases.

ATTACHMENT

NATURAL HERITAGE PROGRAMS BY STATE

UNITED STATES (9/89)

STATE HERITAGE PROGRAMS

ALABAMA NATURAL HERITAGE PROGRAM
Dept. of Conservation & Natural Resources
Division of Lands
Folsom Administration Building
64 N. Union St., Rm.752
Montgomery, AL 36130
205/242-3007
COORDINATOR/BOT: Scott Gunn
ECOLOGIST/BOT: Haynes Currie
ZOOLOGIST/DATA MGR: Mark Bailey

ALASKA NATURAL HERITAGE PROGRAM
707 A Street, Suite 208
Anchorage, AK 99501
907/279-4549
PROGRAM DIRECTOR: Judy Sherburne
ECOLOGIST: Gerry Tande
BOTANIST: Robert Lipkin
ZOOLOGIST: Ed West
DATA MANAGER: Julie Michaelson
ADM.ASST: Brenda Theyers

NONGAME BRANCH
ARIZONA HERITAGE PROGRAM
Arizona Game & Fish Department
2222 W. Greenway Rd.
Phoenix, AZ 85023
602/942-3000
BRANCH SUPERVISOR: Terry Johnson x362
ECOL/DATA MANAGER: Bruce Palmer x366
ZOOL (mammals): Barry Spicer x367
ZOOL(herps): Cecil Schwalbe x365
ZOOL(birds): Rich Glinski x364
ZOOL(fish): Dean Hendrickson x368
WILDLIFE REHAB: Cindy Dorothy x370

ARKANSAS NATURAL HERITAGE INVENTORY
The Heritage Center, Suite 200
225 E. Markham
Little Rock, AR 72201
501/371-1706 x501
CHIEF, RESEARCH SECTION: vacant
ECOLOGIST: Tom Foti
BOTANIST: Bert Pittman
DATA MANAGER: Cindy Osborne

CALIFORNIA NATURAL HERITAGE DIVISION
The Resources Agency
Dept. of Fish & Game
1416 9th Street, 12th floor
Sacramento, CA 95814
916/322-2493
CHIEF, HERITAGE: Susan Cochrane
COORD, CNDDB: John Ellison, 322-2495
CLERICAL ASST: Shirley Paullin, 322-2493
BOTANIST: Roxanne Bittman, 323-8970
ASST. BOTANIST: Rick York, 324-3815
BOT.DATA TECH: Julie Horenstein,327-0712
ZOOLOGIST: Darlene McGriff, 322-2494
ASST. ZOOLOGIST: Dee Warenycia,322-7307
ECOLOGIST: Bob Holland, 324-6857
ASST. ECOLOGIST: Cyndi Roye, 324-3818
ASST. ECOLOGIST: Carrie Shaw, 324-0475
ECOL.DATA TECH. vacant, 445-5758
SYST.ADM/DATA MGR: Pat Crevelt, 324-3813
SR.DATA PROC.TECH: Beth Bennett, 445-6383
DATA PROC.TECH: John Palmer, 324-3812
MARKETING MGR.: Elaine Hamby, 324-0562
MARKETING ASST: vacant
GEOGRAPHER: Thomas Lupo, 445-6264
LANDS & NAT.AREA COORD: Steve Nicola, 322-6469
REALTY SERV.COORD: John Donnelly, 327-0711
N. AREAS COORD: Marc Hoshovsky, 322-2446
CONS.PLAN/ECOL: Marlyce Myers, 324-0563
END.PLANT MGMT.RES.ASST: Laurie Wickenheiser

COLORADO NATURAL AREAS INVENTORY
Dept. of Natural Resources
1313 Sherman St., Rm.718
Denver, CO 80203
303/866-3311
DIRECTOR: David Kuntz
BOTANIST: Tamara Naumann -3047
DATA MANAGER: vacant

CONNECTICUT NATURAL DIVERSITY DATABASE
Natural Resources Center
Dept. of Environmental Protection
State Office Building, Rm. 553
165 Capitol Avenue
Hartford, CT 06106
203/566-3540
COORD/BOTANIST: Les Mehrhoff
BIOLOGIST/DATA MGR: Nancy Murray
ECOLOGIST: Ken Metzler
ZOOLOGIST: Dawn McKay
DATA HANDLER: vacant

DISTRICT OF COLUMBIA
(Contact Headquarters Heritage Task Force)

DELAWARE NATURAL HERITAGE PROGRAM
Division of Parks & Recreation
89 Kings Highway
Dover, DE 19903
302/736-3431
PROGRAM MANAGER: Ron Vickers -5285
COORDINATOR/INFO MGR: Leslie Trew -3431

FLORIDA NATURAL AREAS INVENTORY
254 E. 6th Avenue
Tallahassee, FL 32303
904/224-8207; 224-0626
COORDINATOR: Jim Muller
ZOOLOGIST: Dale Jackson
ZOOLOGIST: John Palis
ECOLOGIST: Dennis Hardin
BOTANIST: Debra White
BOT/ECOLOGIST: Ann Johnson
RES.SPEC/DATA MGR: Katy NeSmith
RES.ASST/DATA HAN: Tom Ostertag
DATA HANDLER/RES.ASST: Susan Carr
DATA HANDLER/RES.ASST: Mary Lubinski
ADMINSTRATIVE ASST: Barbara Huston
SECRETARY: Vicki Garland

GEORGIA NATURAL HERITAGE INVENTORY
Department of Natural Resources
Route 2, Box 119 D
Social Circle, GA 30279
404/557-2514
COORDINATOR/ZOOL: Chuck Rabolli
BOTANIST: Tom Patrick
ECOLOGIST: Jon Ambrose
DATA MANAGER: Carol Corbat

HAWAII HERITAGE PROGRAM
1116 Smith St., #201
Honolulu, HI 96817
808/537-4508
COORDINATOR: Audrey Newman
ASST.COORD/DATA MGR: Joan Dobbs
ECOLOGIST: Sam Gon
ECOLOGICAL RES.ASST: Joan Canfield
BOT/ASST.DATA MGR: Marie Bruegmann
FIELD COORDINATOR: Steve Perlman
ZOOLOGIST: Luciana Honigman
ZOOLOGICAL RES.ASST: Karen Lombard
BOTANICAL RES.ASST: Joel Lau
BOTANICAL RES.ASST: Jennifer Crummer
BOTAICAL RES.ASST: Karen Asherman
DATA TECHNICIAN: Roy Kam
CARTOGRAPHIC TECHNICIAN: Maile Sakamoto

IDAHO NATURAL HERITAGE PROGRAM
Dept. of Fish & Game
600 S. Walnut Street, Box 25
Boise, ID 83707
208/334-3402
COORDINATOR/ZOOL: Craig Groves
BOTANIST/ECOL: Bob Moseley
DATA MANAGER: George Stephens

ILLINOIS NATURAL HERITAGE INVENTORY
Department of Conservation
Division of Natural Heritage
524 S. 2nd St.
Springfield, IL 62706
217/785-8774
COORDINATOR: John Buhnerkempe
DATA SPECIALIST/SCI: Jean Karnes
DATA MANAGER: Randall Collins

INDIANA HERITAGE PROGRAM
Div. of Nature Preserves, IN DNR
605b State Office Building
Indianapolis, IN 46204
317/232-4052
COORDINATOR/BOT: Cloyce Hedge
ECOLOGIST/BOT: Mike Homoya
ECOLOGIST: Art Spingarn
ENV.REV/ECOL: Hank Huffman
DATA MGR/ZOOL: Michelle Martin

IOWA NATURAL AREAS INVENTORY
Bureau of Preserves & Ecological Services
Dept. of Natural Resources
Wallace State Office Bldg.
Des Moines, IA 50319
515/281-8524
COORDINATOR/ZOOL: Daryl Howell -8524
ECOLOGIST: John Pearson -3891
BOTANIST: Mark Leoschke -8012
DATA HANDLER: John Fleckenstein -8967

KANSAS NATURAL HERITAGE PROGRAM
Kansas Biological Survey
2041 Constant Ave.
Lawrence, KS 66047-2906
913/864-3453; -4407
COORD/BOTANIST: Craig Freeman -3453
ZOOLOGIST/DATA MGR: Bill Busby -7692
ECOLOGIST: Chris Lauver -7691

KENTUCKY HERITAGE PROGRAM
KY Nature Preserves Commission
407 Broadway
Frankfort, KY 40601
502/564-2886
DIRECTOR: Richard Hannan
BOTANIST: Marc Evans
ZOOLOGIST: Ronald Cicerello
ORNITHOL: Brainard Palmer-Ball
SECRETARY: Julie Smither
STEW COORD: Joyce Bender
ARCHAEOLOGIST: A. Gwynn Henderson
DATA MGR: Tom Bloom

LOUISIANA NATURAL HERITAGE PROGRAM
Department of Wildlife & Fisheries
P.O. Box 98000
Baton Rouge, LA 70898-9000
504/765-2821
COORDINATOR: Gary Lester -2823
BOTANIST: Nelwyn Gilmore -2975
ECOLOGIST: Latimore Smith -2976
ZOOLOGIST: Richard Martin -2820
SECRETARY: Patty Hernandez -2821

MAINE NATURAL HERITAGE PROGRAM
Office of Comprehensive Land Use Planning
Dept. of Economic & Community Development
State House Station 130
219 Capitol Ave.
Augusta, ME 04333
207/289-6800
COORDINATOR/ZOOL: John Albright -6807
BOTANIST: Trish DeHond -3261
ACTING DATA MGR: Francie Tolan
ECOLOGIST: vacant
ZOOLOGIST: vacant

MARYLAND NATURAL HERITAGE PROGRAM
Dept. of Natural Resources
B-2, Tawes Bldg.
Annapolis, MD 21401
858-8041 x2870 D.C. Direct Dial
301/974-2870
ADMINISTRATOR: Janet McKegg
Dan Boone
C.REG.ECOLOGIST: Rodney Bartgis,791-4027
W.REG.ECOLOGIST: Ed Thompson,689-8215
WETLANDS INV: Ashton Berdine
SECTION 6: David Maddox
SECTION 6: Johanna Thomas
DATABASE COORD: Lynn Davidson
DATABASE BOTANIST: Gene Cooley
DATA/SPEC.PROJ.ASST: Ronald Leonard
DATABASE ASST/E.R.: Judy Harding

MARYLAND HERITAGE (continued)
SPECIAL PROJECTS: Aaron Keel
CHESAPEAKE BAY ECOLOGIST: Wayne Tyndall
REG.INV/PROTECTION: Katherine McCarthy
REG.INV/PROTECTION: Judith Robertson
REG.INV/PROTECTION: Richard Wiegand
REG.INV/PROTECTION: Ann Rossheim
SECRETARY: Deborah Brooks

MASSACHUSETTS NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM
Div. of Fisheries & Wildlife
100 Cambridge St.
Boston, MA 02202
617/727-9194
ASSISTANT DIRECTOR: Tom French
COORDINATOR: Henry Woolsey
BOTANIST: Bruce Sorrie
ZOOLOGIST: vacant
ECOLOGIST: Pat Swain
DATA MGR: Meg Goodwin
ENVIR.REVIEW: Jay Copeland
HAB.PROT.SPEC: Annie Woolsey
WETLANDS WILDLIFE BIOL: Steve Roble
STATE ORNITHOLOGIST: Brad Blodget
SECRETARY: Julie Santos

MICHIGAN NATURAL FEATURES INVENTORY
Mason Building, 5th floor
Box 30028
Lansing, MI 48909
517/373-1552
ACTING COORD/ZOOL: Leni Wilsmann
ECOLOGIST: Gary Reese
ECOLOGIST: Dennis Albert
DATA MANAGER: Stu Ouwinga
BOTANIST: Mike Penskar
ASST. ZOOLOGIST: Jim Bess

MINNESOTA NATURAL HERITAGE PROGRAM
Department of Natural Resources
500 Lafayette Rd.
St. Paul, MN 55155
612/296-4284
COORDINATOR: Barbara Coffin
BOTANIST: Welby Smith
ECOLOGIST: Keith Wendt
ZOOLOGIST (Nongame): Lee Pfannmuller
DATA MANAGER: Dave Olfelt
BOTANIST: Nancy Sather
DATA MGMT ASST: Cathy Malave
Minnesota County Biological Survey:
COORDINATOR: Carmen Converse
ECOLOGIST: Robert Dana
ECOLOGIST: John Almendinger

MISSISSIPPI NATURAL HERITAGE PROGRAM
Museum of Natural Science
111 N. Jefferson St.
Jackson, MS 39201-2897
601/354-7303
RES.SECTION COORD/BOT: Will McDearman
COORD/BOT/WILD.BIO: Ken Gordon
ZOOLOGIST: Bob Jones
INVERT. ZOOL/MALACOL: Paul Hartfield
MAMMALOGIST/DATA MGR: Cathy Shropshire
ECOLOGIST: Ronald Wieland
NATURAL AREA STEWARD: Clifton Eakes

MISSOURI NATURAL HERITAGE INVENTORY
Missouri Dept. of Conservation
P.O. Box 180
Jefferson City, MO 65102
314/751-4115
END.SPEC.COORDINATOR: Mike Sweet-X200
WILDLIFE ECOLOGIST: Dennis Figg-X309
ECOL/BOTANIST: Tim Nigh-X309
DATABASE MGR: Eleanor Gaines-X310
SECRETARY: Diana Munsterman-X204

MONTANA NATURAL HERITAGE PROGRAM
State Library Building
1515 E. 6th Ave.
Helena, MT 59620
406/444-3009
COORDINATOR/ZOOL: David Genter -3019
BOTANIST: Steve Shelly -3009
ECOLOGIST: vacant -3009
ASST.BOTANIST: Lisa Schassberger
ASST.ZOOLOGIST: Cedron Jones
DATA TECH/SEC: Margaret Beer -3009
DATA ASST: Shannon Fitzpatrick

NEBRASKA NATURAL HERITAGE PROGRAM
Game and Parks Commission
2200 N. 33rd St.
P.O. Box 30370
Lincoln, NE 68503
402/471-5421
COORD/ZOOL: Mary Kay Clausen -5421
BOTANIST: Mike Fritz -5419
ECOL/DATA MGR: Gerry Steinauer -5469

NEVADA NATURAL HERITAGE PROGRAM
Dept. of Conservation & Natural Resources
c/o Div. of State Parks
Capitol Complex, Nye Bldg.
201 S. Fall St.
Carson City, NV 89710
702/885-4370
COORDINATOR/ZOOL: Glenn Clemmer
DATA MGR: Kris Kolar
BOTANIST: Teri Knight,702/739-3381
Natural History Museum
University of Nevada-LV
4505 Maryland Parkway
Las Vegas, NV 89154

NEW HAMPSHIRE NATURAL HERITAGE INVENTORY
Dept. of Resources & Economic Development
P.O. Box 856
Concord, NH 03302-0856
603/271-3623
COORDINATOR/BOT: Frankie Brackley
ECOLOGIST: Dan Sperduto
DATA MANAGER/BIOLOGIST: Edie Hentcy

NEW JERSEY NATURAL HERITAGE PROGRAM
Office of Natural Lands Management
501 E. State St., CN404
Trenton, NJ 08625
609/984-1339
COORD/ECOL: Tom Breden, 984-0097
BOTANIST: David Snyder, 984-7849
ZOOLOGY ASST: Larry Torok, 292-9451
DATA MANAGER: vacant, 633-2765
ASST.BIOL: Elena Williams, 984-0059

NEW MEXICO NATURAL RESOURCES SURVEY SECTION
Villagra Bldg.
Box 2167, Room 129
Santa Fe, NM 87503
505/827-7862
COORD/BOT: Paul Knight, 827-7865
BOTANIST: Anne Cully
BOT.DATA MAN: Ellen DeBruin, 277-5330

NEW YORK NATURAL HERITAGE PROGRAM
Wildlife Resources Center
Delmar, NY 12054-9767
518/439-7488
COORD/ZOOL: Kathryn Schneider x257
ECOLOGIST: Carol Reschke x258
BOTANIST: Peter Zika x259
INFO. MANAGER: Rachel Pleuthner x256
DATA HANDLER: Candie Leunig x256

NORTH CAROLINA NATURAL HERITAGE
Dept. of Natural Resources
& Community Development
Div. of State Parks & Recreation
Box 27687
Raleigh, NC 27611
919/733-7701
COORDINATOR: Charles E. Roe -7701
BOTANIST/ASST COORD: Alan Weakley -7701
INV.INFO.SPEC: JoAnne Tippett -4181
PROTECTION SPEC: Julie H. Moore -7701
ZOOLOGIST: Harry LeGrand, Jr. -4181
ECOLOGIST: Mike Schafale -4181

NORTH DAKOTA NATURAL HERITAGE INVENTORY
N.D. Parks & Recreation Department
1424 W. Century Ave., Suite 202
Bismarck, ND 58501
701/224-4887
COORDINATOR: Pam Dryer
ECOLOGIST: Bonnie Heidel
N.D. Game & Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501
701/224-4887
ZOOLOGIST: Randy Kreil
BOTANIST: Alexis Duxbury

OHIO NATURAL HERITAGE PROGRAM
Div. of Natural Areas & Preserves
Dept. of Natural Resources
Fountain Square, Bldg. F
Columbus, OH 43224
614/265-6453
DIV. CHIEF: Richard Moseley, Jr. -6452
Data Management Unit:
SUPERVISOR: Pat Jones -6472
DATA SPEC: MaryAnn Silagy -6818
DATA SPEC: Vickie Hugo -6409
DATA INTERN: Barb Burkholder -6818
DATA INTERN: Jennifer Chan
Botanical Inventory SubUnit:
CHIEF BOTANIST: Allison Cusick -6471
BOTANIST: Jim Burns -6440
BOTANIST (Marietta,OH): Marilyn Ortt 373-3372
ECOLOGIST: Jim Kooser -6440
Zoological Inventory SubUnit:
CHIEF ZOOLOGIST: Dan Rice -6469

OKLAHOMA NATURAL HERITAGE INVENTORY
Oklahoma Biological Survey
Sutton Hall, Room 303
625 Elm St.
Norman, OK 73019
405/325-1985
COORD/ZOOL: Pat Mehlhop-Cifelli
DATA COORDINATOR: Ian Butler
BOTANIST: Linda Watson
ECOLOGIST: Sue Glenn
AQUATIC ZOOLOGIST: vacant
SEC/DATA HANDLER: Karla Anderson

OREGON NATURAL HERITAGE PROGRAM
Oregon Field Office
1205 NW 25th Avenue
Portland, OR 97210
503/229-5078
COORD/ECOLOGIST: Jimmy Kagan
ZOOLOGIST: Mark Stern
DATA MGR/BOTANIST: Sue Vrilakas
WETLANDS/AQ.ECOL: John Christy

PENNSYLVANIA NATURAL DIVERSITY INVENTORY
PNDI-EAST
Bureau of Forestry, DER
34 Airport Dr.
Middletown, PA 17057
717/948-3962
COORDINATOR/ECOLOGIST: Tom Smith
ZOOLOGIST: Anthony Wilkinson
ASSOC. ECOLOGIST: Anthony Davis
ECOLOGY RES.ASST: Greg Edinger
DATA MANAGER: Eugenie Drayton

PNDI-WEST
Western Pennsylvania Conservancy
Natural Areas Program
316 Fourth Ave.
Pittsburgh, PA 15222
412/288-2774
COORDINATOR/BOT: Paul Wiegman
ECOLOGIST: Charles Bier
DATA MGR: Chris Boget
DATA HANDLER: Bernie Beck

BUREAU OF FORESTRY
Forest Advisory Services
P.O. Box 1467
Harrisburg, PA 17120
717/787-3444
STATE COORD/BOT: Kathy McKenna

RHODE ISLAND HERITAGE PROGRAM
Dept. of Environmental Mgmt.
Div. of Planning & Development
83 Park St.
Providence, RI 02903
401/277-2776
COORDINATOR/BOT: Rick Enser
ZOOLOGIST: Chris Raithel
ENVIR.PLAN/DATA MGR: Joanne Michaud

SOUTH CAROLINA HERITAGE TRUST
S.C. Wildl. & Marine Resources Dept.
P.O. Box 167
Columbia, SC 29202
803/734-3893
CHIEF, NONGAME & HERITAGE TRUST:
Tom Kohlsaat, 734-3912
COORDINATOR: vacant
ZOOL/INFO SPEC: Steve Bennett -3930
LAND PROT.COORD: Stu Greeter -3918
BOTANIST/ECOLOGIST: John Nelson -3917
NONGAME BIOLOGIST: John Cely -3916
DATA MANAGER: Kathy Boyle -4032
NONGAME BIOL/PRESERVE MGR:
Jim Sorrow, 863-9921
SECRETARY: Kaye Dial Daniels -3893

SOUTH DAKOTA NATURAL HERITAGE
S.D. Dept. of Game, Fish & Parks
Wildlife Division
445 E. Capitol Ave.
Pierre, SD 57501-3185
605/773-4227
BOT/ECOLOGIST: David Ode
NONGAME BIOLOGIST: Eileen Dowd

ECOLOGICAL SERVICES DIVISION
Tennessee Dept. of Conservation
701 Broadway
Nashville, TN 37203
615/742-6545
DIRECTOR: Dan Eagar -6553
ZOOLOGIST: Paul Hamel -6546
BOTANIST: Paul Somers -6549
NAT.AREAS COOR/ECOL: Daryl Durham-6548
DATA BASE MGR: Bill Christie -6550
AQ.BIO/PRO.REV.COOR: Roberta Hylton-6552

TEXAS NATURAL HERITAGE PROGRAM
Texas Parks & Wildlife Dept.
4200 Smith School Road
Austin, TX 78744
512/389-4586
COORD/DATA MGR: Bob Murphy -4997
ZOOLOGIST: Rex Wahl -4361
ZOOLOGIST: Andy Price -4360
ECOLOGIST: David Diamond -4364
BOTANIST: Jackie Poole -4363
BOTANIST: Steve Orzell -4362
DEPT.LANDS INV.SPEC: Bill Carr -4586
DATA MGR: Dorinda Sullivan -4533
SECRETARY: Penny Denmon -4586

UTAH NATURAL HERITAGE PROGRAM
3 Triad Center, Suite 400
Salt Lake City, UT 84180-1204
801/538-5524
COORDINATOR/ECOL: Joel Tuhy -5521
BOTANIST: Ben Franklin -5522
DATA MGR/ZOOLOGIST: Sandy Boyce -5520

VERMONT NATURAL HERITAGE PROGRAM
Agency of Natural Resources
Center Building
103 S. Main St.
Waterbury, VT 05676
802/244-7340
COORDINATOR: Chris Fichtel -3553
BOTANIST/ECOLOGIST: Liz Thompson
DATA MANAGER: Everett Marshall -3552

VIRGINIA NATURAL HERITAGE PROGRAM
Dept. of Conservation & Recreation
203 Governor St., Suite 402
Richmond, VA 23219
804/786-7951
COORD/ECOL: Mike Lipford, 786-4554
ECOLOGIST: Chris Clampitt, 225-4855
ZOOLOGIST: Chris Pague, 786-8633
ZOOLOGIST: Kurt Buhlman, 786-8633
BOTANIST: Chris Ludwig, 225-4856
DATA MANAGER: Katie Perry, 786-8646
DATA HANDLER: Megan Rollins,786-7951

WASHINGTON NATURAL HERITAGE PROGRAM
Department of Natural Resources
Mail Stop EX-13
Olympia, WA 98504
206/753-2448
COORDINATOR/BOT: Mark Sheehan
NATURAL AREA SCI: Reid Schuller
WETLAND ECOLOGIST: Linda Kunze
PLANT ECOLOGIST: Rex Crawford
BOTANIST: John Gamon
DATA MGR: Deborah Naslund
ASST.DATA MGR.: Nancy Sprague
HABITAT PRESERV.SPEC: Betty Rodrick (WDW)
SECRETARY: Frances Gilbert

WEST VIRGINIA WILDLIFE/HERITAGE DATABASE
Dept. of Natural Resources
P.O. Box 67
Elkins, WV 26241
304/636-1767
COORDINATOR: Brian McDonald, x55
BOTANIST: P.J. Harmon, X42
DATA MANAGER: Barbara Sargent

WISCONSIN NATURAL HERITAGE PROGRAM
Endangered Resources/4
Dept. of Natural Resources
101 S. Webster St., Box 7921
Madison, WI 53707
608/266-0924
COORD/ZOOL: Bill Smith, 266-0924
ECOLOGIST: Eric Epstein, 267-5038
BOTANIST: June Dobberpuhl, 267-5037
DATA MGR/BOTANIST: Thomas Meyer, 266-0[illegible]4
ZOOLOGIST: Tim Vogt, 266-0924
MAPPER: Karen Agee
MAPPER/ENV.REV: Kathy Bleser
MAPPER/ENV.REV: Annie Notestein
ENV.REVIEWER: Dianne Hills

WYOMING NATURAL DIVERSITY DATABASE
3165 University Station
Laramie, WY 82071
307/766-3441
COORDINATOR/BOT: Hollis Marriott
ECOLOGIST: George Jones
DATA MANAGER: Mary Neighbours

REGIONAL HERITAGE DATA CENTERS

NAVAJO NATURAL HERITAGE PROGRAM
Navajo Fish & Wildlife
P.O. Box 1480
Window Rock, AZ 86515
602/871-6534
COORDINATOR: Gordon Nez
BOTANIST: Bill Hevron
DATA MGR: Yolanda Barney
ZOOLOGIST: vacant
BIOL/ENV.REVIEW: vacant

TVA REGIONAL HERITAGE
River Basin Operations
Wildlife & Natural Heritage Resources
Norris, TN 37828
615/494-9800
COORDINATOR: William H. Redmond, 632-1593
BOTANIST: Joseph L. Collins -1594
NAT.AREAS COORD: Judith Bartlow -1592
ZOOLOGIST: Charles P. Nicholson -1590
DATA MANAGER: Susan C. Jeffers -1595

GREAT SMOKY MTNS. NATIONAL PARK
Resource Management Division
Route 2
Gatlinburg, TN 37738
615/436-1250
COORDINATOR/BOT: Keith Langdon -1250
DATA MANAGER: Sue Powell -1298
SCIENTIST/DATA MGR: Robert Emmott -1298
BOTANIST: Janet Rock

SOUTH FLORIDA HERITAGE DATA CENTERS
EVERGLADES RESEARCH CENTER
EVERGLADES NATIONAL PARK
P.O. Box 279
Homestead, FL 33030
305/245-5260
DATABASE MGR/COORD: David Buker
WILDLIFE BIOL: John Ogden
BIOL.TECH/ECOLOGIST: John Stenberg
MARINE BIOLOGIST: Tom Schmidt

BIG CYPRESS NATIONAL PRESERVE
S.R. Box 11
Ochopee, FL 33943
813/695-2000
RES.BIOL/COORDINATOR: Jim Snyder
BOTANIST: John DeLapp, 695-4251
WILDLIFE BIOL: Deborah Jensen

BISCAYNE NATIONAL PRESERVE
P.O. Box 1369
Homestead, FL 33030
305/247-2044
RESOURCE MGMT. COORD: Richard Curry

VIRGINIA COAST RESERVE
The Nature Conservancy
P.O. Box 624
Brownsville Road #608
Nassawadox, VA 23413
804/442-3049
DIRECTOR: John M. Hall
ASST.PRES.MGR: Barry R. Truitt
AA: Karen B. Hall
SECY: Lynn M. Badger
CARETAKERS: Charlie T. Farlow
Jacqueline M. Farlow
GRNDSKPR/HSEKPR: Anne Truitt

APPENDIX F

RECOMMENDED SCHOOLS FOR NEPA CURRICULUM

Properly designed and placed training courses can enhance DoD decision makers' awareness of the provisions of the National Environmental Policy Act (NEPA). The NEPA requirements could be taught to selective groups at a number of DoD and Military Service educational institutions. The targeted groups should include acquisition executives, engineers, lawyers, and operational commanders. The NEPA curriculum should be available at a representative number of schools so that all key decision makers can be exposed to at least one NEPA course during their careers. The following schools and special training programs or courses are in the best position to reach current and future decision makers:

- The Department of Defense
  - Defense Systems Management College, Fort Belvoir, Va.: Well suited for acquisition executives and program managers.
  - Industrial College of the Armed Forces, National Defense University, Fort McNair, Washington, D.C.: Offers access to a wide range of mid-level functional managers from all Services.
  - The National War College, National Defense University, Fort McNair, Washington, D.C.: Attended by senior leadership of all Services.
  - Armed Forces Staff College, Norfolk, Va.: Offers access to a wide range of mid-level functional managers from all Services.
- U.S. Army
  - U.S. Army War College, Carlisle Barracks, Pa.: Provides access to senior Army leadership in a wide range of functional areas.
  - U.S. Army Command and Staff College, Fort Leavenworth, Kan.: Offers access to a wide range of mid-level functional managers.
  - The U.S. Army Logistics Management College, School of Acquisition Management, Fort Lee, Va.: For Army acquisition managers.

- The Judge Advocate General's School, Charlottesville, Va.: For Army lawyers.
- U.S. Army Facilities Engineering Support Agency, Fort Belvoir, Va.: For Army facilities engineers and construction program managers.

- U.S. Navy and Marine Corps
  - U.S. Naval War College, Newport, R.I.: Attended by mid- to senior-level Navy and Marine Corps officers.
  - Naval School, Civil Engineer Corps Officers, Port Hueneme, Cal.: For Navy Civil Engineer Corps engineers and officers.
  - Prospective Commanding Officers' Shore Activities Course sponsored by the Chief of Naval Personnel: For installation commanding officers.
  - Acquisition Logistics Management Center, Naval Station, Washington, D.C.: For Navy acquisition managers.
  - Navy Justice School, Newport, R.I.: For Navy and Marine Corps lawyers.
- U.S. Air Force
  - Air War College, Air University, Maxwell Air Force Base (AFB), Ala.: Attended by senior Air Force officers.
  - Air Command Staff College, Air University, Maxwell AFB, Ala.: Attended by mid-level functional officers.
  - Air Force Institute of Technology, School of Systems and Logistics, Wright Patterson AFB, Ohio: For Air Force acquisition managers.
  - Air Force Institute of Technology, School of Civil Engineering and Services, Wright Patterson AFB, Ohio: For Air Force construction engineers and facilities managers.
  - Air Force Judge Advocate General School, Maxwell AFB, Ala.: For Air Force lawyers.
  - Commanders' Professional Development School, Maxwell AFB, Ala.: Designed for senior officers who will be given command of an installation.

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Opportunities exist to better integrate the National Environmental Policy Act (NEPA) into DoD decision making. In defense acquisition programs, the DoD should include the NEPA requirements in the documentation already required at the DoD's highly structured decision milestones. Directives on the milestones do not mention NEPA. NEPA actions for basing and construction decisions for acquisitions should also begin with those milestones. The environmental impact statement (EIS) could be easily tiered for each of these acquisition stages. Operations decisions and basing and construction decisions unrelated to defense acquisitions are made from DoD to installation levels by a multitude of decision makers. The DoD should therefore increase the NEPA awareness for all of its key decision makers. NEPA requirements are omitted from many regulations covering these decisions and should be added. The NEPA should also be added to the curricula of many of the Service's schools and training courses. Accountability for NEPA could be enhanced through the inspector general system. DoD may also use its budgeting system to help monitor NEPA implementation. The DoD and Services should increase the resources they commit to NEPA. Communication among the NEPA staffs should be improved by annual symposiums and quarterly working groups.

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