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ENGINEERING SAFETY AND ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT PLAN VOLUME 4 OF 4 NSWC WHITE OAK MD

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EVENTS ANALYSIS, INC.

NAVAL SURFACE WARFARE CENTER
WHITE OAK
ENGINEERING SAFETY AND ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT PLAN

VOLUME IV

Description of Master Safety and Environmental Risk Management Plan
with
Summary of Considerations and Rationale
For the Plan

PREPARED FOR

NAVAL SURFACE WARFARE CENTER

Contract N60921-88-D-0007
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Volume IV Part I

DESCRIPTION OF MASTER SAFETY AND ENVIRONMENTAL RISK MANAGEMENT PLAN WITH SUMMARY OF CONSIDERATIONS AND RATIONALE FOR THE PLAN

TABLE OF CONTENTS

SUMMARY REPORT OF CONSIDERATIONS AND RATIONALE LEADING TO WHITE OAK SAFETY AND ENVIRONMENTAL RISK MANAGEMENT MASTER PLAN

EXECUTIVE SUMMARY

Safety and environmental management needs at White Oak Laboratory are complex, requiring consideration of employee protection in the workplace, protection of the facility, equipment and grounds against damage or harm by accident or fire, protection of the environment against unacceptable harm, and protection against potential harm to the community around the Laboratory.

A satisfactory S&E management program must consider internal, horizontal and longitudinal safety and environmental aspects of activities. The review of White Oak activities, indicated a need for an S&E management program that would result in a more balanced S&E program for its employees, the environment and facilities within departments, across departmental boundaries and over the life cycle of an activity or operation.

NAVSWC has a comprehensive employee protection program, described in NAVSWCINST 5100.6B Occupational Safety and Health, last revised July 1988. NAVSWC has an increasingly effective program for the protection of the ecology and environment, and is forming a high-level Environmental Management Committee as this is written. Safety and environmental protection of White Oak's facility, equipment and grounds has also received attention, but appears to have been given somewhat less balanced attention than other S&E initiatives in recent years. White Oak is reacting to the effects of less than adequate attention in the past to life cycle S&H consideration with "retrofit" projects in several areas requiring substantial resources. To reduce the potential need for future retrospective safety initiatives, a comprehensive S&E management plan was devised for White Oak. That plan and the concepts, principles and practices on which it is based, are reported here.

1. INTRODUCTION

The purpose of this document is to describe the NAVSWC-WHITE OAK Safety and Environmental (S&E) Risk Management Master Plan, and to provide a "corporate memory" of the considerations and rationale leading to the Plan. By documenting both the Plan and these considerations and rationale, the effects of future changes on those considerations and rationale can be identified efficiently. That should make it easier to judge the acceptability of those effects on the safety and environmental risk management system and its performance.

This Master Plan reflects current Navy and White Oak safety and environmental policy, including the points highlighted in the Commander's 1990 Safety Standdown policy document and other Navy requirements. It also reflects needs identified by the documentation of White Oak's safety and environmental management system, and environmental and safety risk analyses. Finally, it also reflects innovations in safety management and engineering concepts, principles and practices introduced in the system safety field in recent years.

The Master Plan systematizes the process for identifying, analyzing, accepting and monitoring safety and environmental risks at White Oak at levels in the Chain of Command commensurate with the level of the risk. Among the main goals of the Master Plan are increased effectiveness and efficiencies of the safety and environmental risk management effort. This will be accomplished primarily by properly tailoring the technical efforts to the levels of risk associated with the undertaking, and by strengthening the development and documentation of risk acceptance decision packages for the risk acceptance decision maker.

The Plan's implementation will require some changes in current S&E practices, and a few new activities not now specified by current instructions or documents.

2 MASTER PLAN DEVELOPMENT PROJECT OVERVIEW

This work was undertaken review and refine as necessary the safety and environmental risk management system associated with energetic materials and directed energies at White Oak. During this effort, facilities were surveyed to idenfity safety and environmental risks associated with those energies. The observations during those efforts indicated needs which should be addressed by the S&E risk management system at White Oak. The project team then developed a plan, congruent with continuing changes in the NAVSWC mission, that could assure adequate identification, analysis and control of safety and environmental risks associated with those activities at White Oak, over their entire life cycle.

During the first phase of the project the White Oak safety and environment (S&E) RMS was defined, using the classical systems model framework (input->operation-> output and feedback.) Inputs were the observed facilities, resources and procedures affecting current S&E activities The operation was the observed organization, staffing, direction, control and monitoring of the resources devoted to the S&E risk management system The outputs were the S&E risk management process, and the risks observed. This report describes the White Oak S&E risk management system and its components, and provides descriptive data about the physical aspects of each relevant White Oak component, about the management and control subsystem, and about the White Oak users. To the extent data was reasonably available, it provides a baseline of operations performed during FY 1990 at White Oak, and their associated risks. That provides a basis for evaluating risks associated with future changes.

The second phase consisted of a general environmental assessment of the observed White Oak operations, and an analysis of observed safety risks. Increasing developmental pressure in the area surrounding White Oak and the mounting environmental stress resulting from that development suggested that it would be prudent to evaluate White Oak operations to identify potential sources of adverse environmental impact from those activities, and to provide a baseline assessment for internal NAVSWC purposes. Since the work was conducted for general internal planning purposes only, no external reviews or public distribution were required or made.

The study considered three types of safety risks that exist as a result of the handling of a broad range of energetic materials and directed energies at White Oak :

a. Internal: Risks to esposures within a a department, in room, facility or area.

b. Lateral: Risks posed to exposures in other parts of a building or facility or equipment, on and off the station, and across departments.

c. Longitudinal: Risks posed to exposures that change over the life of the activity or project or material.

After identifying and analyzing those risks, the risk levels for the significant risks were estimated, to determine their significance. The focus of this work was on identification and assessment of risks and risk levels, rather than simply performing a compliance inspection. The reason for this approach is that while compliance is necessary, compliance alone may not assure adequate control of risks in an R&D environment. Further, non-compliance with some requirements may not raise actual risks if alternative controls are in place. By focusing on risk levels, line managers can concentrate on systematically and rationally determining the need for action, the selection of control options, the setting of priorities and the allocation of resources to specific actions.

Phase III consisted of the development and documentation of modifications to the White Oak S&E risk management system. The modifications had to be responsive to observed risk control needs, be compatible with other Federal, Department of Defense, Navy, State and Laboratory safety and environmental requirements, and be congruent with present and future Mission requirements. This modification process resulted in the White Oak Safety and Environmental Risk Management Master Plan (Plan) and related instructions for its implementation.

3 MASTER PLAN DEVELOPMENT

Safety and environmental management needs at White Oak Laboratory are complex, requiring consideration of the protection of employees in the workplace, protection of the facility, equipment and grounds against damage or harm by accident or fire, protection of the environment against unacceptable harm, .protection against potential harm to the community around the Laboratory, and continuing compliance with environmental requirements.

A satisfactory S&E management program must consider internal, horizontal and longitudinal dimensions of activities. The review of White Oak activities, indicated a need for an S&E management program that would result in balanced S&E protection for its employees, the environment and facilities within departments, across departmental boundaries and over the life cycle of an activity or operation.

NAVSWC has a strong employee protection program, described in NAVSWCINST 5100.6B Occupational Safety and Health, last revised July 1988. NAVSWC has an increasingly strong program for the protection of the ecology and environment, and is forming an Environmental Management Committee as this is written. Protection of White Oak's facility, equipment and grounds has also received attention, but appears to have been given somewhat less balanced attention than other S&E initiatives in recent years. White Oak is reacting to the effects of less than adequate attention in the past to life cycle S&H consideration with expensive "retrofit" projects in several areas. To reduce the potential for future retrospective safety initiatives, a comprehensive S&E management plan was devised for the White Oak. That plan is reported here.

Five concepts form the technical foundation for the White Oak S&E Risk Management Master Plan:

- Utilize the best available system safety management and engineering concepts and principles to achieve planned safety performance levels

- Systematically search for S&E risks
- Use estimated risk levels to set S&E priorities
- Strengthen S&E capabilities in Departments
- Control changes to maintain accepted S&E risk levels

New safety and environmental risk management and engineering technology has emerged with the development of system safety management and engineering concepts, principles and practices, largely through the initiatives of the Department of Defense elements. These concepts, principles and practices have made it possible to achieve previously unattainable levels of good safety performance and risk control. The adaptation of these new concepts, principles and practices to operations and activities involving energetic materials and directed energies at White Oak is the basis for the safety and environmental risk management master plan which follows.

3.1 MANAGE AND ENGINEER SYSTEMS TO ACHIEVE PLANNED SAFETY LEVELS

The basic concepts of system safety are the application of management principles to establish safety performance objectives, in terms of acceptable risk levels, and a program to achieve those levels over the life of the system or activity. With the program and plan in place, the next step is to assign the needed technical analysis and management resources to proactively identify system hazards, eliminate them by design or establish controls to limit residual risks to accepted levels, track their implementation and the continuing achievement of the accepted risk levels over the system's useful life, and document the process to provide an audit trail. These essential features of system safety have been adapted to the NAVSWC safety and environmental needs at White Oak in two ways. System safety concepts and principles have been used to provide criteria for assessment of current safety and environmental risk management practices at White Oak, and they have been used to guide the preparation of the Master Plan in this document.

3.2 LOOK FOR S&E RISKS SYSTEMATICALLY

A second key concept is to use an energy-based approach to ensure a systematic search for and discovery of risks in a system, the assessment of the level of risks, and the control of the risks found. This technical approach provides a *proactive* method for analyzing a system to pinpoint potentially adverse interactions created by energy flowing into, within and out of the system. Identifying interactions that can do undesired work on exposed people, objects or the environment provides the basis for discovering safety and environmental risks. To understand the potential for unwanted work, the system within which the energy functions must be adequately understood, so the energy can be traced into, through and out of the system. After the locations of the energies are known, the exposures to the energies can be identified, and interactions between the energies and exposures hypothesized or predicted for that system. From these interactions, or hypothesized changes in the energy flows or barriers, the effects of the energies on the exposures can be defined, and the harm predicted, estimated or hypothesized. Thus the analyst can systematize the search for hazards and risks to minimize oversights and omission that lead to future surprises (mishaps) and problems.

3.3 USE ESTIMATED RISKS TO ESTABLISH PRIORITIES

Another key system safety concept is use of risk estimates to establish priorities for safety actions, and for identifying risks that may be unacceptable. Practically, this results in the use of a Risk Assessment Coding (RAC) approach to the estimation of risk levels. Estimation of risks involves uncertainties, and is an imprecise process with present state of knowledge. The reason for adopting this technical approach for the Master Plan is to provide a common estimating method that will produce useful estimates of *relative* risks across a wide range of risk types. This RAC assignment method is specified for Navy use in its system safety programs, and is adaptable to the needs addressed by the Master Plan. While imperfect, it does provide a

reasonable and fairly consistent basis for determining the level and acceptability of the risks disclosed by the risk analysis methods, and for setting priorities among competing corrective or control action choices.

3.4. STRENGTHEN S&E CAPABILITIES IN LINE DEPARTMENTS.

The last key system safety concept is to use suitably qualified and disciplined safety personnel to do safety oriented technical and management tasks. This idea is implemented with the introduction of "S&E designees" within each line Department engaged in activities posing risks associated with energetic materials and directed energies. The reason for this change is to focus the improvement in the level of expertise in safety management and engineering among a small group of personnel, and relieve relatively untrained personnel free to do the work for which they are best suited. It would have a complementary effect of expediting congruent actions within a Department by individuals with increasingly expert technical knowledge of both the department's needs and capabilities, and Center's safety and environmental requirements and needs. These designees would be White Oak's and Departments' collateral duty intra-departmental S&E action officers, ensuring that the Department remains in compliance with S&E requirements and adequately accomplishes needed risk discovery, analysis, control, monitoring and acceptance functions. These designees would also coodinate interdepartmental S&E risk control efforts, providing intradepartmental S&E technical and compliance guidance (With C8 support) during all phases of a program or activity. Finally, the S&E would serve to cooordinate enfironmental compliance activity at the department level by serving as a liason with the center environmental department.

3.5 CONTROL CHANGES AFFECTING S&E RISKS

Another key system safety management concept is to control changes that might be introduced into a system without adequate consideration, resulting in unintentionally increased risks. "Change control"[1] requiress analysis of any changes introduced into an existing or planned system for their potential safety and environmental consequences before they are implemented. This proactive analysis can be *tailored* to the nature, scope and energy content of the system, the extent of the change or scope of the anticipated effects. Tailoring depends on the level of understanding of the system within which the change occurs. If the system is new or unknown, the level of effort to assess changes or innovation will be greater than when a minor change is introduced into an older system with low energy levels and a known and documented potential for safety or environmental harm.

Change control also requires consideration of disclosure procedures to inform parties involved in the risks about changes in risk levels that occur when a change is made. This can involve disclosures when changes to existing systems are temporary or permanent. It may require notifying personnel of changes in their tasks and how they perform those tasks,. For example, a temporary change which diasbles or partially disables a fire or explosion protective system during maintenance or construction, might require the party intorducing the changes to notify affected parties so they adopt temporary procedures and training to maintain risks at the accepted levels. The point is that whenever a change affects risks to others, the party making the change should disclose the effects of the change to parties who might have to act on the information.

The third aspect of change control is a monitoring system by which activities and the risk management system are audited to determine if the planned S&E performance is being achieved, and if the risks remain as accepted.

Within the framework of these key concepts, and the tasks which flow from these concepts, the highlights of the work performed during each of the project tasks is described in the following sections.

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[1] This management concept is also known by other names, such as configuration management, management of change, etc.

3.6 ESTABLISHING REQUIREMENTS FOR THE PLAN.

3.6.1 Imposed S&E requirements.

Criteria considered for the White Oak Safety and Environmental Risk Management Master Plan (Plan) were wide ranging. First, the Plan had to provide for the present and future satisfaction of all Federal, Department of Defense, Navy, State and Center safety and environmental requirements imposed on an activity. These requirements were identified by a survey of directives, applicable to NAVSWC-White Oak, MD, found in Consolidated Subject Index of Instructions by Washington Headquarters Organizations, NAVPUBNOTE 5215 and in NAVSWC Instructions. Additionally, requirements imposed by exemptions and waivers applicable to the operations also provide criteria that must be considered in a Plan.

3.6.2 Other general considerations.

Any Plan must achieve conformance with the letter and spirit of safety and environmental requirements imposed on White Oak, or adopted by White Oak for its operations in an efficient manner. The Plan should facilitate compliance while minimizing the burden on managers in the Chain of Command to recognize what S&E requirements are applicable, to keep abreast of changes in those requirements, and to apply them to their activities when necessary.

In addition to satisfying compliance needs, this Plan must respond to other considerations to achieve proper management of the S&E risks. Even when White Oak is in full compliance with all Federal, Department of Defense, Navy, State and Center safety and environmental requirements, White Oak's missions may pose new S&E risks or new combinations of risks that may not be addressed fully by existing requirements. Such risks need to be identified, understood, and eliminated or properly controlled before the activity is undertaken, and the controls need to be maintained satisfactorily over the life cycle of the activity. This means that system-defining, analytical and assessment tasks performed under the Plan should produce reliable information outputs for informed risk acceptance of such risks at the proper management level in the Chain of Command. To accomplish this effectively, S&E technical analyses must describe adequately the system and operations posing the risks, and then systematically identify and document the predicted risks, risk levels and controls associated with any proposed changes at White Oak. From outputs observed in samples of SOPs reviewed during the study, such a systematic process is not followed routinely, and does not now seem to exist at White Oak.

The Plan also needs to provide for the documentation and communication of relevant S&E risks and trade-offs affecting the acceptance of the risks in an efficient, harmonious way that allows managers reasonable discretion to act. This means that options for the controls proposed, or the acceptance or rejection of risks should be included in documentation submitted to managers for their decisions. The documentation requirements also need to consider how Center vulnerability to interference with its mission because of unexpected safety or environmental disputes can be minimized.

From the perspective of individuals implementing the Plan, it should provide for clear specification of S&E goals and objectives toward which each person can work. These goals or objectives can take the form of an S&E risk list, a list of S&E concerns, or a list or hazards, for example. This need was observed in SOPs reviewed, where only two SOPs in the 10% random sample of approximate 400 active SOPs contained a hazards list. Other SOPs contained only the precautions - the solution - without specifying the problems - the risk or hazards - for which the precautions were being specified.

3.6.3 Management and Technical S&E Tasks.

The Plan needs to define unambiguously the S&E management and technical tasks, tailoring specifications, task outputs, and criteria for their acceptability or approval. The Plan should provide incentives for implementation, rather than imposing a burdensome process without discernible benefits, which staff would tend to resist. The primary implementation benefits perceived during the study would be to ensure most efficient and effective control of S&E risks, to

minimize adverse findings by outside inspectors or reviews, to use S&E analyses for multiple purposes, and to evolve a knowledge base to improve the efficiency of analyses over time.

One key management task requirement is to instill in each organizational unit at White an awareness of the need to recognize, define, control and monitor S&E risks over the entire life cycle of an activity, and to ensure that the technical tasks required to accomplish this control are accomplished. A second management task is to ensure that resources commensurate with the tasks are dedicated to these S&E risk management tasks. A third management task is to ensure that staff performing the technical tasks has the requisite knowledge and skills to produce the required S&E risk acceptance decision packages to satisfy White Oak's needs. A fourth key management task is to monitor or audit the performance of the S&E functions to ensures they are performing as advertised. Observations during the study indicated that all the tasks were being performed to varying degrees in the operations surveyed. The observed variations in performance suggested an need to establish common performance guidance for each of the management, to reduce the potential for oversights and omissions errors in S&E tasks, especially for new risks not addressed by current instructions.

Guidance for the technical S&E tasks needed to support an S&E risk management process needs to be provided by the plan. To achieve the desired results with minimal perturbation of existing activities, any technical tasks required under the plan must be in consonance with the present intellectual framework and capabilities of persons required to perform them. Present Departmental S&E risk assessment capabilities and practices were utilized to the maximum degree possible in the plan. This consideration resulted in the adoption of a different approach to safety versus environmental risks. Present personnel strengths in the physical sciences and experience considering safety risks should enable most Departments to do most of the safety risk assessments satisfactorily, with modest additional guidance. However, environmental science capabilities are not as widely available or practiced as safety, in most Departments. Training to enhance present capabilities can be provided, but realistically, environmental sciences training potential is constrained by current capabilities. Additionally, imposed requirements for environmental analyses are more volatile than safety requirements, so environmental risk assessment needs must be treated differently in the plan.

Technical tasks should provide for a rapid learning curve and, if possible, economies of scale as an increasing number of analyses are prepared. Repetitive tasks should be minimized under the Plan. The technical tools provided or required should be formalized, be readily available and applicable, encourage conformance with the Plan, and produce useful work products. Additionally, the Plan should provide for data developed by the tasks to become a "knowledge asset" that grows in value to the users and White Oak or the Navy over time.

The technical tasks should also facilitate preparation of Standard Operating Procedures or Special Job Procedures to control the risks. Risks should be disclosed to anyone with a need to know. A method for rating the relative effectiveness of alternative actions to control risks should be provided to help in the consideration of trade-offs among the choices, and in the selection of the "best" control action.

The Plan should help managers in the Chain of Command to identify and act promptly on changes in the safety and environmental requirements and compliance demands. Since changes often affect more than one Department, a convenient process to identify, disclose, and balance trade-offs between safety or environmental risks vs other potential gains or losses should be provided. Such a process should also provide the Chain of Command an increased awareness of Departmental and Center environmental problems, concerns or trade-offs.

3.6.4 Documentation

The changing nature of White Oak's mission often involves changes in energy sources, forms or effects. Management of changes, while maintaining risks at accepted levels, lies at the heart of an S&E RMS. That requires the documentation of a baseline, as in this study. Once documented, the baseline provides a starting point for documenting, tracking and monitoring of new energies, energy levels, operations, exposures and risks existing White Oak activities. This need necessitates consideration of each of these factors, plus project planning and related S&E analysis capabilities and practices and documentation-related issues.

Documentation and use of the analysis results is a task best performed on computers because of the volume of activity and resultant quantity of data involved. Future data storage, access and retrieval needs, and the publication of output data in printed format needed for the coordination and approval processes also dictate use of computers for the documentation tasks. The PEP system or the NAVSWC Information Command and Control System (NICCS) as it is now called, was selected for this task, for several reasons. NICCS database capabilities are more limited than stand-alone programs for personal computer systems widely used at White Oak. However, the accessibility of NICCS from Dahlgren and White Oak as well as outlying locations, the programming ease and common data entry, retrieval and printout procedures, the ease of administrative updating, consistency of outputs and distribution of information accumulated, and its relative ease of use outweighed the greater speed, versatility and potential capacity of individual PC database programs.

During the development of a project or change, a major consideration was the present Departmental S&E risk assessment requirements, capabilities and practices. The Plan needed to be kept workable by keeping changes in existing requirements, capabilities and practices to a minimum. This consideration resulted in the adoption of a different approach to safety vs environmental risks. Present extensive capabilities in the physical sciences and experience considering safety risks should enable most Departments to do most of the safety risk assessments satisfactorily, with moderate additional guidance. However, environmental science capabilities are not as widely available or practiced as safety, in most Departments. Additionally, requirements for environmental analyses are more volatile than safety requirements, so environmental risk assessment needs must be treated differently in the Plan.

The planning team took into consideration how the new plan would dovetail into existing NAVSWC instructions. Of particular interest were the NAVSWC Occupational Safety and Health, Hazardous Waste handling and disposition, OP 05, and the Center Hazardous Waste instruction. The goal was to meet newly identified needs, but to also limit changes in these instructions, thereby avoiding the necessity of retraining or reprogramming personnel who now understand and comply with those instructions, and systems which support them.

As part of the integration of S&E system elements, an element is needed to ensure that the lessons learned are preserved after inspections. The documentation of compliance inspection deficiencies and their correction for inspections of all types should be handled through the S&E Officer and through the Departmental S&E Designees, and maintained in a "lessons learned" file system by the S&E Officer, but accessible to all.

In combination, these needs and considerations resulted in the Safety and Environmental management process and Master Plan which follows.

NAVAL SURFACE WARFARE CENTER
WHITE OAK
ENGINEERING SAFETY AND ENVIRONMENTAL
RISK ASSESSMENT AND MANAGEMENT PLAN

VOLUME IV

Part II

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Volume IV Part II

MASTER SAFETY AND ENVIRONMENTAL RISK MANAGEMENT PLAN

1 S&E RISK MANAGEMENT MASTER PLAN

This Master Plan provides processes for the identification and assessment of safety and environmental risks, their documentation, their elimination or control, their acceptance and subsequent monitoring of performance over the life of an activity. The basic objective of the plan is to ensure that Center risks are known, weighed and acted on in a mannner that ensures compliance with all imposed requirements, It is designed to function in parallel with and support other functions required for a project. When implemented by the NAVSWC Instructions, the guidance manuals, the accompanying computer support package and Environmental Management Committee' support, the E&S Plan will be fully responsive to each of these considerations.

1.1 HIGHLIGHTS OF NEW S&E RISK MANAGEMENT PROCESS

This E&S Master Plan introduces several improvements to the way S&E risks are presently identified, documented and controlled, to make the process more effective and more efficient. The key change in the framework for thinking about and approaching safety and environmnetal protection tasks throughout the Center. New organization and staffing of departmental S&E risk management tasks is introduced with the assignment of the departmental Safety & Environmental Designee (DSED.) Changes in safety engineering and analysis tasks offer new systematic techniques and guidance for the the definition of a proposed or existing system, for the discovery, definition and assessment of safety risks associated with that system, for the identification and implementation of optimal risk control options and followup needs, and for the preparation of risk acceptance decision packages. The principal changes that will benefit departments engaged in the handling of energetic materials and directed energies at White Oak include:

- a cohesive framework to structure departmental safety and environmental risk control management and engineering tasks.
- a departmental collateral duty safety and environmental designee to help departmental technical and management personnel discharge their safety and environmental responsiblities .
- technical methods to help produce systematic safety and environmental risk analyses.
- a procedure to help identify safety and environmental protection priorities and effects of alternative control actions.
- more uniform decision packages to help risk acceptance decision makers.
- a safety and environmental management data system to achieve continually improving efficiency for S&E analyses and control of Center activities.

The framework for this safety and environmental risk management process is the body of system safety concepts, principles and practices in place within the various elements of DOD since the late 1970s. The basic system safety concepts have been adapted from MILSTD 882B, augmented as appropriate for White Oak activities. They have contributed to significant reductions in loss rates in numerous DOD systems, and have been adapted by other Governmental agencies to their needs. They are particularly effective when used with energetic materials and directed energies. The DOD process has been augmented to include more rigorous system definition and ongoing monitoring requirements to optimize it for application to White Oak activities. The key concepts include the idea that you can predict the safety performance of a system or component well enough to empower managers with the tools they need to achieve the predicted safety performance over the life of the equipment or activity. The second key concept is a risk assessment coding system that can provide a basis for indicating the level of concern warranged by a particular hazard or risk, relative to other hazards or risks in the system, or – with care – at system interfaces.

To assist department management and technical personnel, a new departmental safety and environmental designee (SED) function is introduced. The SED is an adaptation of the Range Safety Officer approach used by G Department at Dahlgren, and a function introduced recently by J Department at Dahlgren. These departments reduce the need for all individuals in a department to keep current with rapidly changing safety or environmental demands and requirements by providing a designated source of current E&S information and requirements to all personnel within their departments. This function will help departmental staffs by performing the liason function with the Center environmental staff. The liaison function is particularly important in helping the department with the implemntation of Center environmental programs as well as serving as a department-level point of contact. As new Center programs are developed in response to changes in activities or demands resulting from changes in regulations and imposed requirements, the department S&E liason will help the environmental staff develop workable compliance programs. This two-way interaction accomplishes two basic goals: to insure departmental compliance with center programs and to achieve realistic S&E programs which can be effectively implemented at the department level. With their special knowledge of the department's activities and S&E demands, they can also help colleagues in the identification, documentation and control of hazards and associated risks during all stages of the life cycle of a department project. Additionally, they provide a point of contact for E&S staff and other departments' SEDs for the exchange of information or coordination of S&E approaches or problems with laterial safety effects.

For technical personnel, this plan introduces a the set of guidelines to help departmental technical personnel address environmental concerns in a practical way. The plan provides technical personnel with indicators of possible enviornmental protection actions which can be recognized readily and flagged. After an indicator is identified, specific analysis requirements and analysis projects –i f any – are identified, assessed and performed by C8 environmental analysis staff. That staff has the current knowledge of the status of environmental regulations and instructions, and skills in analyzing and controlling environment risks.

For managers, the plan also provides a tool for the assignment of estimated risk levels to each risk (with and without controls) by persons initiating the change. These personnel are considered to be most knowledgeable about the system and its operation, and the significance of associated risks. The estimated risk levels from departments with a SED will provide a more uniform and reliable basis for assigniing risk levels, which will lead to better-informed risk acceptance decisions at all levels of the Chain of Command.

For risk acceptance decision makers, the plan introduces documentation of S&E risks into decision packages. The packages provide for the description and communication of risks, controls and trade-offs influencing the risk acceptance decision. A package of computerized databases operated by C8, and accessible to all PEP system users, is provided to facilitate preparation of S&E analyses and decision packages by technical personnel such as the SED or project engineers. The system is compatible with a system developed for use on the Dahlgren Ranges to satisfy risk management needs.

For the individual doing the initial S&E analysis, the technical methods used to identify risks and controls reflect a predominantly qualitative Energy Trace and Barrier Analysis (ETBA) method, which anyone with a basic science education can use. The computerized PEP/NICCS risk data entry form leads the analyst through the steps necessary to define risks adequately, to estimate risk levels, and to assess control options. Analysts can enter S&E analysis data into the NICCS system during their analysis tasks, or from other documentation after analysis tasks are completed, as from a Preliminary Hazard List or Preliminary Hazard Analysis form. The determination of the need for environmental assessments and environmental impact statements is revised, to help project development personnel reduce past difficulties with these decisions.

The process is designed to capture individual safety and environmental analysis efforts and build an "answer machine" that will help technical analysts perform their tasks with ever-increasing efficiency, while building a capability that could have application far beyond the Center. Data generated during the analysis task is captured in a database created from the entries. The computer will print output reports from that data base, in a format compatible with

Preliminary Hazard Analysis reports, to provide part of the S&E documentation which can be attached the risk acceptance element of project approval decision process. Printouts can also be used to support SOP development and preparation. As the database grows, benefits of the accumulated data will include reduced effort for analysis of similar projects or energy sources, or the identification of all energies that might be present in a specific grid on the station map during energy conflict analyses during the analysis of lateral safety effects of a project.

2 SAFETY AND ENVIRONMENTAL MANAGEMENT PROCESS ELEMENTS.

The Plan provides for a safety and environmental management and engineering process, with elements applicable to changes or new activities as discussed below. The process begins with the initial consideration of any change to a system involving energetic materials or directed energies, or introduction of a new system involving energetic materials or directed energies, and ends with the disposal of the system. An overview of the process is shown in Attachment 1 A detailed description of the process is presented in a narrative format in the following sections. Attachment 1 is comprehensive but complex, because the number and types of risks are very varied , and their management involves numerous options and decisions.

This process permits NAVSWC managers and supervisors to assess proactively the safety and environmental risks introduced by changes, and track the predictions over the life cycle of the changed systems. The model is structured so alternative courses of action can be considered and assessed against each other. Further, the model provides for review at a level of management or supervision commensurate with the risk levels.

The process was designed to work with predicted risks, risk levels and action choices entered into the NICCS data base. It will support systematic coordination of tailored S&E risk assessments and control plans among personnel in the Chain of Command, and acceptance of risks at a level in the Chain of Command commensurate with predicted risk levels. It also provides for review and monitoring of planned actions after an activity is initiated, to ensure that approved risk levels are actually achieved.

2.1 NAVSWC S&E RMS ADMINISTRATION

Decisions to accept risks are reserved to the Commander or, by delegation, to the Safety & Environmental Officer or Department Heads in selected circumstances, depending on the risk level involved.

The White Oak S&E Risk Management System Plan is structured to be managed by the Department Heads who manage activities at a component of the White Oak facility. Department managers are responsible for the proper identification of safety and environmental risks introduced by changes or new activities in their departments. NAVSWC provides department managers with safety and environmental-related technical support from the Safety and Environmental Officer, and through that Office, other sources.

2.1.1 Master Plan Design considerations.

During the development of this Review Process, several considerations influenced its design. First, it was considered that it would be more cost-effective to provide safety analysis guidance to the initiating department staff than to ask the safety analysts to acquire an understanding of all the different systems and activities that might have to be analyzed. This guidance was provided by a combination of the structure of the data entry forms for the database, and the contents of the database Users' Manual. A second consideration was that the initiating departments would be in the best position to recognize similarities of proposed projects with previous projects, and determine whether precedents would apply, particularly during the early stages of a project. If they apply, abbreviated procedural review steps were provided. A third consideration was that safety and environmental expertise might be required during these analyses, and should be readily available to the initiating departments during the process, and this was incorporated into the process. Another consideration was that economies of scale could be introduced into the analysis process by making available for new analyses the data produced during previous analyses. This was implemented by providing for the entry of the analysis data by the initiating department, and by a provision for "mastering" the individual files from analysts into a Center master database file accessible to all qualified analysts.

Because of the complexity of environmental requirements, and the rapid changes in those requirements, the determination of the degree of environmental risk analysis was built into the database entry process. A "yes" answer to a question on the environmental sections indicates a need to consult with the environmental specialists to resolve the environmental requirements, and the need for more analysis. If an environmental assessment (EA) or environmental Impact

statement (EIS) was required, arrangements for production of this specialized output would be made by the Safety and Environmental Officer, with funds supplied by the initiating department or such other sources as might be identified.

At the point where the S&E risks were adequately identified, the initiating department takes the analysis and produces a Standard Operating Procedure. The SOP is joined with a printout of the risk assessment (from the project Risk and Energy Inventory Tracking database) and assembled into an S&E decision package. This decision package containing the risk information would be submitted to the the Safety and Environmental Officer via the DSED for approval. During the review the Experimental Ordnance Review Board may be asked to review the planned activity. After S&E approval, the S&E decision package would be joined with the rest of the project plan and upon completion of that task could be on the White Oak schedule.

The initial assessment is considered to be a preliminary hazard analysis, with accompanying estimated risk levels before and after controls are implemented. At any stage of the process, additional analysis may be necessary if requested by someone in the approval chain. When more analysis or an EA or EIS is required, the subsequent level of review moves up the Chain of Command and may involve other support services. This can be observed in the increased scope of involvement in the Review Process. For example, if more than a preliminary hazard analysis is required, the Environmental Management Committee or Radiation Safety or Laser Safety Committees may become involved in the process, in a consultative role. A draft instruction to establish this EMC was prepared to describe its objectives, organization and actions. A White Paper describing considerations weighed in its formation is attached to that document. With an EIS, Command and others get involved. Additionally, the arrangements for the more extensive specialized analysis may be made by the Safety and Environmental Officer.

During this review process, the risk acceptance decision process involves levels in the Chain of Command commensurate with the best estimates of the risks and risk levels. See Attachment 1 S&E White Oak Risk Acceptance Decision Levels showing these decision levels. From that matrix, the decision levels for each risk level can be observed. The NICCS databases will show the risk levels for any analyses entered into the NICCS system. One of the main implementation tasks will be to encourage supervisors and managers to ensure that changes are analyzed and documented to show risk levels before the changes are accepted and implemented. This is an essential element of the change control process.

2.1.2 Model SOP

Prior work by Events Analysis, Inc. in the modeling of the standard operating procedures development process had resulted in the generic model of the process. During this task the model was further refined to satisfy the needs of the White Oak and the Master Plan requirements. After risks are analyzed and considered to be acceptable by the initiating technical personnel, they will prepare the SOP and incorporate it into the final risk acceptance decision package.

The development of SOPs under the Master Plan flows from the risks and controls documented in the NICCS Preliminary Environmental and Risk Assessment (PESRA) database. Each record describes the problem (the uncontrolled risk) and a control option proposed for that problem. The control entries (the control, strategy and related controlled RAC) identify the control and its effectiveness. Thus the entries define the element of the SOP that must be incorporated into the safety and environmental section of the overall SOP for that project.

The format of the model SOP, an operational readiness tree, provides a supplemental checklist to further reduce the potential for oversights and omission of risks during the S&E analyses. By reviewing each item on the readiness tree, the analyst can determine the applicability of the item to the system, and if not already covered, can incorporate it into the analysis and documentation. The Plan is designed so every SOP item reflects one or more risks documented in the PESRA database, *and* so every PESRA database item with an uncontrolled risk above the acceptable level is addressed by an SOP item. This built-in cross-check becomes visible in the risk acceptance decision package, which includes a system definition, a list of the documented risks, and the SOP for the project.

One of the features of the Master Plan is the presentation of generalized control options related to the energy control concepts, and a procedure for rating the effectiveness of alternative choices with a Control Rating Code. The purpose of this material is to enable analysts to identify a range of candidate options, rather than just a single action for each problem. This guidance is included in the White Oak NICCS Risk and Energy Inventory Tracking System Users Guide, and in lookup tables in the REIT data entry screens.

2.2 MASTER PLAN DESCRIPTION

This section describes the Plan and how it is intended to function. The discussion is based on the NAVSWC WHITE OAK SAFETY AND ENVIRONMENTAL RISK MANAGEMENT MASTER PLAN found in Attachment 1, segments of which are reproduced in this section.

2.2.1 Safety and Environmental Designee"

The Plan is based on the designation of a new collateral duty function with the title "Safety and Environmental Designee" in each department involved with the acquisition, storage, creation, use or disposition of energetic materials, including hazardous materials and hazardous wastes, or directed energies. This Designee, appointed by the Department Head and the Safety and Environmental Officer, in consultation with each other, would be the focal "in-house" E&S coordinating and staff support for line management safety and environmental tasks in a Department. The purposes of this new function are to provide

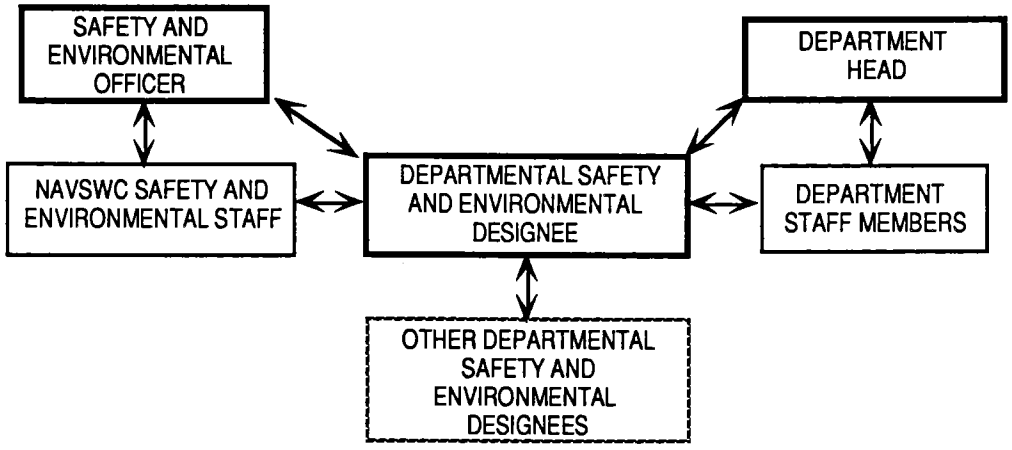
- an intradepartmental body of safety and environmental knowledge and peer information source for departmental management and staff, able to perform routine safety support and environmental liaison tasks and coordination within a department, and to offer technical E&S guidance on safety and environmental matters, including arrangements for technical help and regulatory interpretations from E&S Officer's staff as required.

- a single point of contact for the Safety and Environmental Officer's staff to communicate new S&E information and updates about changes in S&E regulations or requirements, get feedback about S&E risk control actions, plans, or needs, anticipated S&E changes which might affect the station or adjacent population; or conducting joint surveys, observations or inspections, monitoring or similar tasks.

- interdepartmental technical S&E liaison for integration of S&E planning when actions by one department may affect S&E interests of another department.

- S&E support for departmental emergency planning and assistance in emergencies.

Departmental Safety & Environmental Designee
Organizational Relationships



After the E&S Designees are trained and functioning, it will no longer be necessary to train all department technical personnel in all required safety and environmental management knowledge and skills required for them to identify and manage E&S risks. Supervisory training will still be necessary under existing requirements, but the scope of this training can be reduced.

2.2.2 Initial S&E planning and tailoring tasks.

The initiation of a change begins with an idea that someone proposes for action, such as

- an RDT&E candidate, a facility addition or modification, or a change arising because of
- a need imposed by any one of a variety of internal or external sources, such as an inspection deficiency,
- a change in NAVSWC policy or
- new State or Federal environmental regulations, etc.

Whatever the source, a *proposal for a change* finds its way into one of the Departments at White Oak. It may surface as

- a new project proposal,
- a modification of a test plan for an existing operation or facility,
- a new equipment, facility or supplier request, or
- an abatement action.

When the candidate change is turned over to a person[2] or group for development, study or other action, consideration of the S&E consequences of the change should be initiated, as shown by Task 1 on the model below.

During this project development process, safety and environmental planning is introduced most effectively during the concept development and discussion phases. The first task required by the E&S Plan, defining the intended system,[3] is congruent with other needs for any new project or change, because it has to be understood to define engineering, cost estimating, scheduling and other essential planning tasks. Gaps in flow charts of the intended system operation (with the preferred E&S analysis technique) as indicated by Task 1 on the figure below, aid specific planning considerations and decisions by highlighting ambiguities and uncertainties which need resolution. Typically, flow charts begin with gross events descriptions, which are refined as the need for additional understanding arises. Usually, planners find the need to describe certain aspects of the system in greater detail to resolve equipment or process flow design, costing or performance questions that become obvious on flow charts. A need for expansion of detail can also occur when safety and environmentally-related questions arise; that is one of the benefits of this tailoring task.

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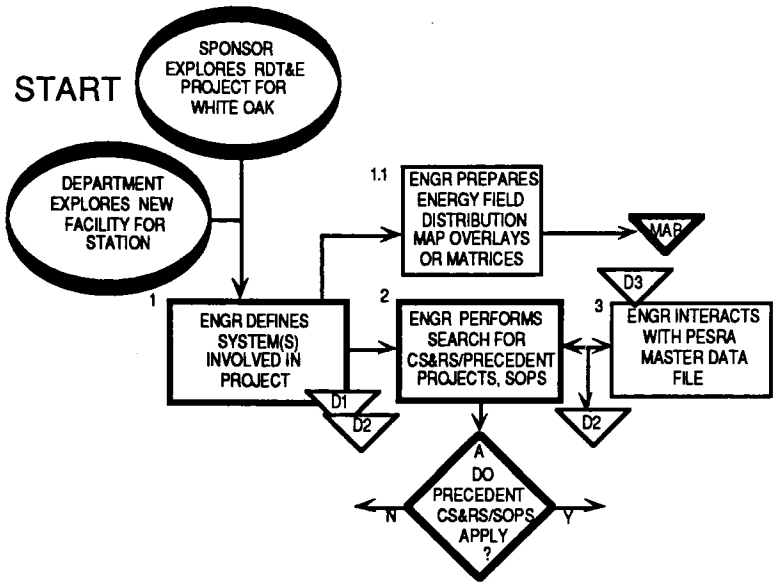
2 The term "ENGR" is used on the model to indicate the person to whom the tasks would be assigned by the Department management. The individual doing the task might be a test engineer for a test, a scientist for a research project, or a design engineer for a new facility or equipment, for example.

3 See segment of flow chart below: task boxes are identified by numbers, beginning with 1 shown adjacent to the box, and decision points by letters beginning with A in the top of the decision diamond symbol.

When energetic materials or directed energies may be involved in a project, system definition Task 1.1, which produces the definition of the energized fields that are likely to be created by normal or abnormal occurrence, should be initiated. The purpose of these energized field maps or overlays is to define where the energies involved in the proposed change will go, over the life cycle of the new system or activity, to ascertain if any potential conflicts or adverse exposures may occur. After the energetic field is defined, based on a "best judgment" or past experience or computations or measurements, potential conflicts with activities in other rooms, buildings, areas, or off-station areas can be located tentatively and addressed for S&E risk identification and assessment purposes. The displays help pinpoint exposures located in the energized fields.



Task 2 involves the identification of S&E rules and requirements that might apply to the proposed change. The search for applicable S&E requirements has two purposes. The first purpose, of course, is to determine what requirements are applicable to the proposed change. The second purposes is to gain insights into the S&E concerns or hazards addressed by the standards, and determine by analogy if those concerns are applicable to the proposed change. Generally, the SEO's staff can provide guidance for the applicable requirements when asked to do so, but they should be reviewed by the person who knows the proposed system change best for best results.

The search would begin with an attempt to identify precedent projects, from which previous requirements and analyses might be available. If so, they could provide some potentially applicable baseline hazard analyses or risk assessments, SOPs and requirements for this task. If not, the identification steps could include a search of NAVSWC S&E instructions, such as those in NAVSWCINST 5100.6B; other Navy instructions or requirements, such as OP 5 for explosives; the Code of Federal Regulations for regulations such as those in 10 CFR for radioactive materials; and civilian codes and standards, such as NFPA codes for fire safety or ANSI standards for lasers, for example.

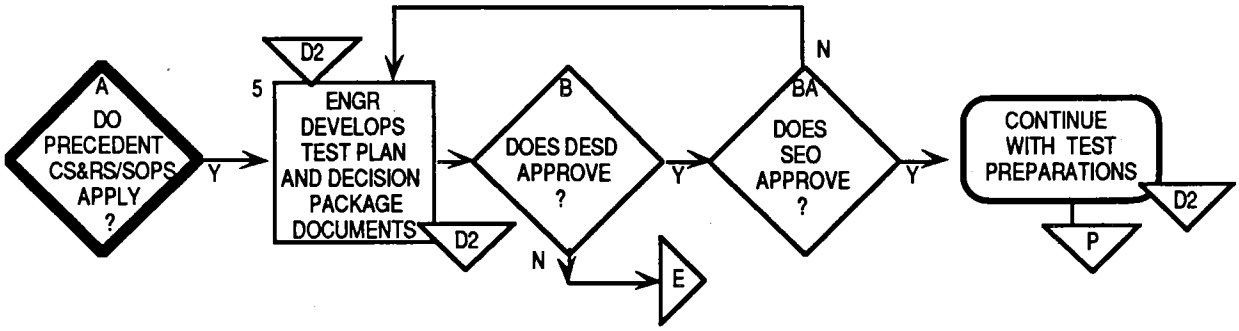
SOPs for similar projects help identify applicable requirements for proposed changes if the S&E hazards and risks are similar. Precedent SOPs should be consulted if they can be found.

Each task either uses or contributes to a database developed to support this Plan (D1,D2, D3) and designed to aid the S&E decision making process. The database is called the Risk/Energy Inventory and Tracking (REIT) System, located on NICCS/PEP. Accessing this database to find precedents is listed as Task 3, in anticipation of its growth. If precedent projects are known, previously analyzed risks can be scanned by looking them up by their project ID number. If precedent project numbers are not known, scanning the database for the energy source name should reveal some comparable records of value. Familiarity with the database will help with this process.

The data outputs of Tasks 1-3 are indicated by the triangles below the tasks. Information shown going to D1 is data about the project; information going to D2 is information about hazards and risks associated with the project. D3 is the Master Center REIT file: the System is described in detail in a REIT System User's Guide accompanying this report.

Completion of these four tasks leads to Decision A: can precedents can be used to define the hazards and risks associated with this new change?

If the answer is "Yes," the preparations for the test can proceed without further technical E&S hazard and risk analyses.



The person preparing the Departmental project planning document[4] would incorporate the safety precautions from the precedent project and SOPs into the new project description, task descriptions and SOPs for the new project approval decision package. If S&E risks are involved, the project approval process would require coordination with the Department's designated Safety and Environmental Designee, (decision B) described above and the NAVSWC Safety and Environmental Officer (SEO) (decision BA).

When explosives are involved, the departmental ESD may elect not to approve the proposal, and to solicit the advice of the Experimental Ordnance Review Board on a proposed action. This is indicated by the transfer symbol "E." If the EORB approves of the action, it is forwarded to the SEO for concurrence. If it elects not to approve the action, the proposal is returned to the initiating party for appropriate action.

After concurrence by the SEO, the test preparations continue without further S&E technical hazard and risk analyses to the pre-operational safety and environmental readiness reviews described later.

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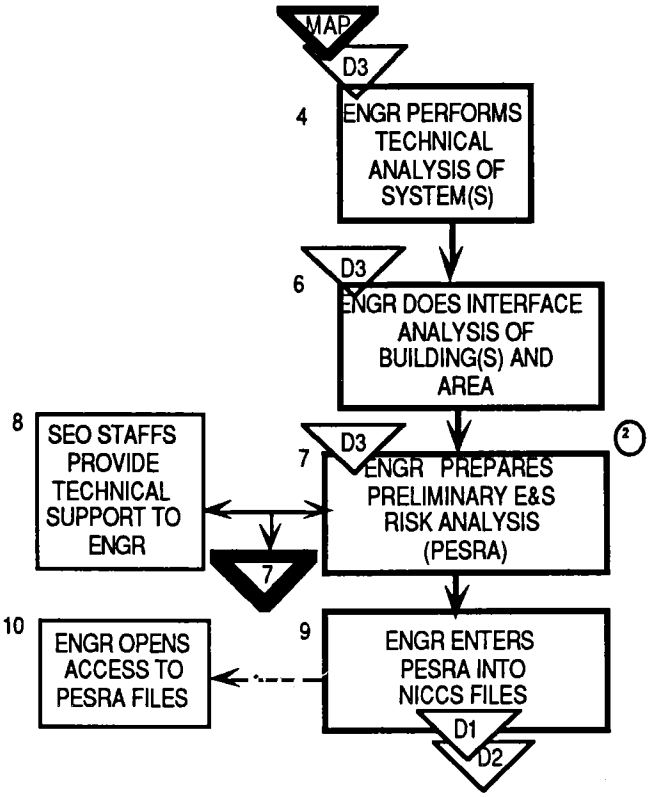
4 Project plans are called different names by different departments. The term "TEST PLAN" is used to indicate the planning approval documentation circulated in Departments

2.2.3 Technical Risk Discovery and Assessment Tasks.

2.2.4 Initial S&E ANALYSIS TASKS.



If the person performing the analysis is unable to use a precedent project for E&S hazard and risk assessment purposes, a technical S&E analysis of the project, based on the system description just completed, must be initiated. The initial Task (4) for this effort is to search the REIT Master Database, maintained by C8, for energies found in similar projects. The transfer symbol (input triangle) with the D3 into Task 4 indicates that data from the REIT Master database is accessed for this purpose. When energetic materials or directed energies are involved, the energized field maps from Task 1.1 should be consulted to suggest additional aspects of the system definition that should be analyzed.

The next task (6) is to analyze the interfaces between the changed system being proposed, and other equipment, personnel, rooms, buildings, areas or in some cases off-Station areas for hazards and associated lateral risks, and for horizontal hazards and risks. This search can be aided by the maps accompanying the report of this study, and by searching the REIT database by Station Map Grid numbers to list energies that might interact or interfere with the proposed project. If questions arise, technical safety or environmental support can be requested from the S&E staff (Task 8) C8 staff can be accessed for guidance during any part of this process (transfer symbol 7) for technical S&E assistance.

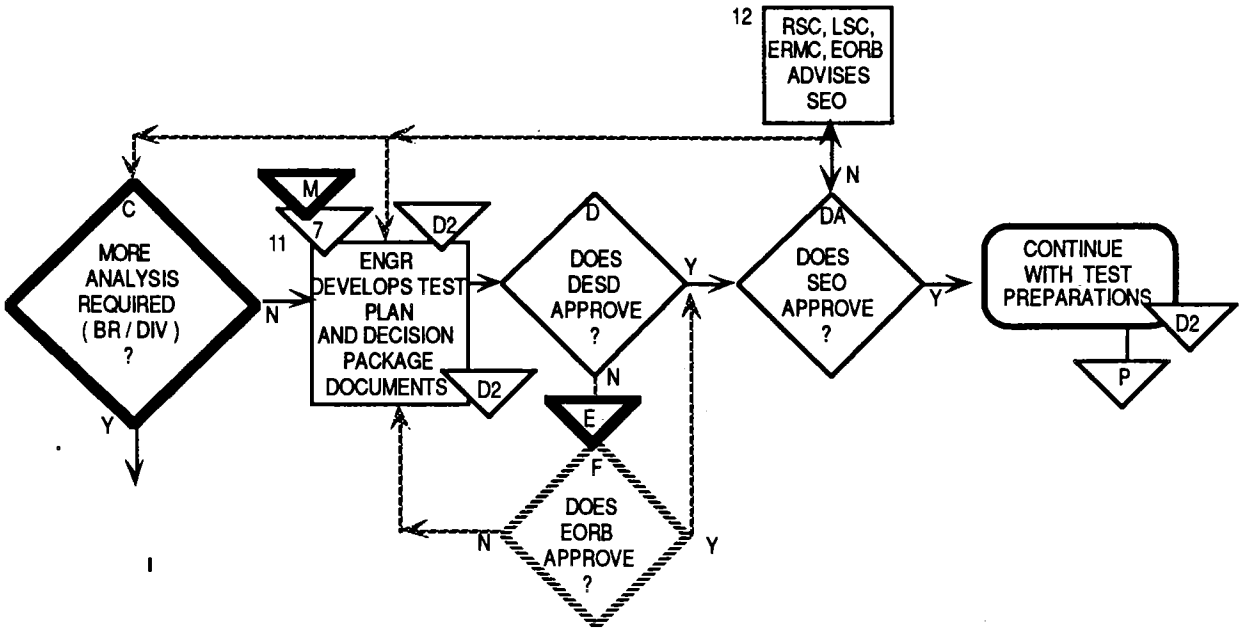
As the initial technical analysis identifies risks, (Tasks 4 and 6) the analyst would begin documentation of the preliminary S&E risk analysis (Task 7). This analysis is supported by the REIT System, which provides a series of questions and blanks for the analyst to complete with data about the system. The actual analytical through process can be performed while entering data directly into the PEP/NICCS system, or it can be performed separately on paper and the results entered when the paper analysis is completed (Task 9). The data remain in the analyst's files (D1 and D2), accessible only to the analyst until Task 9 is completed.

Note that Task 7 requires the outputs to include estimated risk levels for both the uncontrolled risk and the risk after the recommended controls have been implemented and are functioning as intended. The RAC codes are used for this purpose.

Upon completion of the data entries and verification, the analyst would notify S&E staff that the new database for the new project is ready to be moved to the Master Center REIT file (D3) (Task 10). After the new project data has been entered into the Master file, it can only be read. Any changes after that time will have to be created as a new departmental data base, and that file mastered by C8 when it is completed. C8 would use the Master (D3) during the approval process.

These initial screening analysis tasks lead to the next decision (Decision C). From the analysis records, the analyst or the branch or division heads must determine whether in their judgment the analysis more analysis is needed for the particular project and energies involved. If the answer is "No" the decision package is prepared (Task 11) and sent through the approval chain.

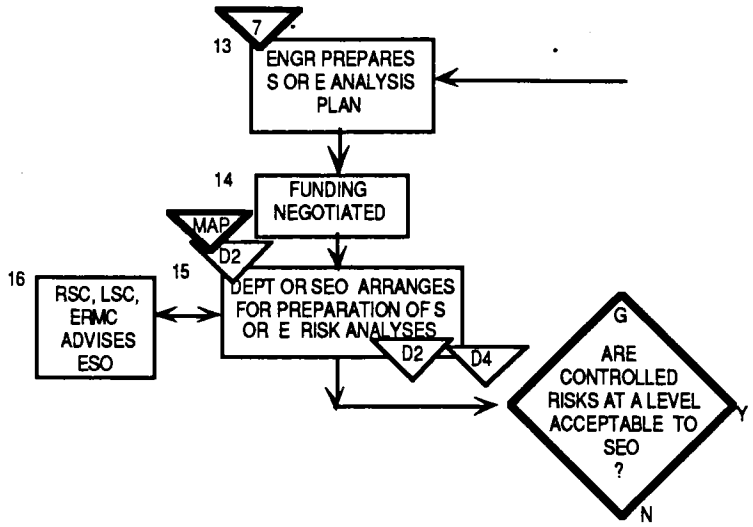
2.2.5 Additional S&E Analysis Tasks



The "No" answer for decisions D or DA provides for further consideration by others. This decision may involve more complicated technical issues than decision B, in which case consultation with an appropriate safety-oriented group may be needed, as shown. Ordinarily the departmental ESD would consult with S&E staff about technical issues, and the SEO would invite the Radiation Safety Committee, Laser Safety Committee, Environmental Management Committee or Experimental Ordnance Review Board to consider and advise on the technical issues (Task 12). The departmental ESD in departments working with experimental explosives ordnance could consult directly with the EORB on matters affecting only the department, but the SEO would still be required to approve the decision package.

After consultation with others the SEO could either return the decision package for more analysis, rework of the decision package (Task 11), or approve the package.

If more safety or environmental hazard or risk analysis is required (Decision C = "Yes") the level of technical effort usually becomes more complex. Definition of analysis objectives, selection of analysis methods and specification of work product content and format must be planned to ensure needed results are achieved by the work (Task 13). This task should be performed in consultation with the departmental SED and the appropriate SEO staff coordination.



2.2.6 Risk Analyses

Frequently this added Safety or Environmental hazard and risk analysis requires funding that may not have been anticipated when the project plan and cost estimates were being formulated initially. Depending on the project needs, the funding may have to be negotiated before the analysis plan can be implemented (Task 14).

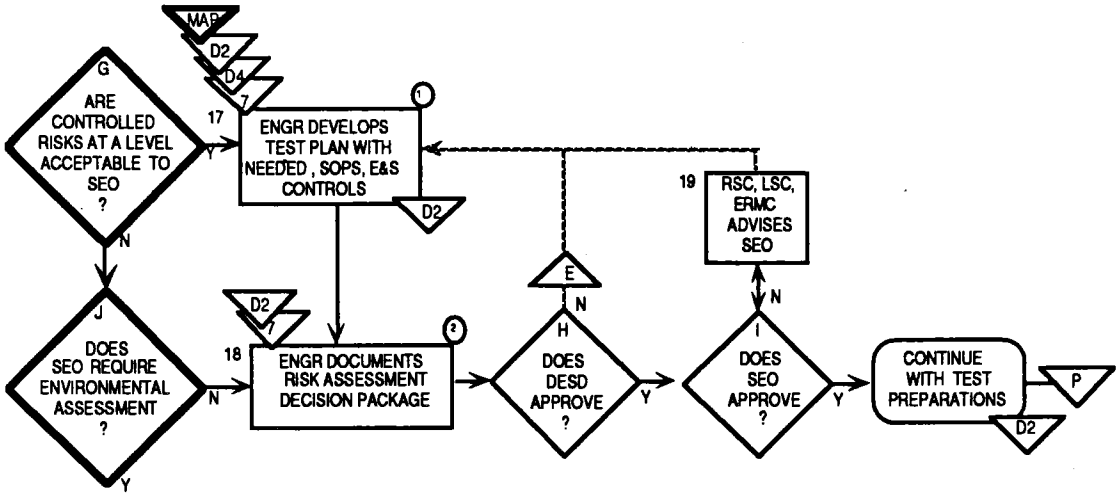
After funding has been arranged, either the department or the SEO arranges for the preparation of the safety or environmental risk analyses (Task 15) and access to system definition and previously identified risk analysis data about the project. These analyses should identify the risks, indicate the control options available and the recommended control options to implement to keep S&E risks at acceptable levels during the life cycle of the system or activity. Arrangements also should be made to meet with the Radiation Safety Committee, the Laser Safety Committee or the Environmental Management Committee, as appropriate, to keep them abreast of the analysis needs and interim findings during the analyses (Task 16) and to get their concurrence in the validity of the results of the analyses. The analyses should identify hazards and risks and also uncertainties (gaps in understanding) about the planned system operation or its S&E effects. Results of the analyses should be entered into the REIT data system files or into environmental risk data files to update the project records.

Note that Task 15 also requires the outputs to include estimated risk levels for both the uncontrolled risk and the risk after the recommended controls have been implemented and are functioning as intended.

The additional analyses are used to support the determination whether the risks are now acceptable to the Department Head and the Safety and Environmental Officer, if the recommended control options are implemented (Decision G.) If the answer is "Yes" the engineer can proceed with the preparation of the test plan, including the SOP(s) and any special S&E controls (Task 17). The next task is the documentation of the test plan, the S&E analyses results, and the proposed SOP(s) into a decision package for the formal approval process (Decision H and I) described earlier. After approval, the preparations for the execution of the plans for the test, facility or activity continue as presently until the system startup stage is reached.

If the answer to Decision G is "No" the proposed project may require additional analyses to identify alternative actions to reduce the S&E risks to acceptable level (additional effort in Task 15.) Another reason for a "No" answer may be that the environmental effects require consideration to decide if they might require an environmental assessment (EA) process to be initiated for the project (Decision J.)

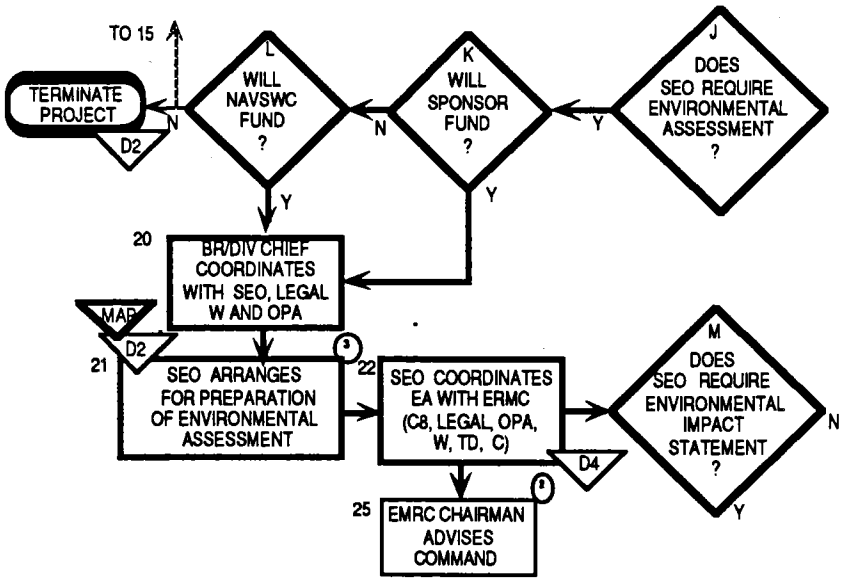
2.2.7 Environmental Assessments



The additional analyses are used to support the determination whether the risks are now acceptable to the Department Head and the Safety and Environmental Officer, if the recommended control options are implemented (Decision G.) If the answer is "Yes" the engineer can proceed with the preparation of the test plan, including the SOP(s) and any special S&E controls (Task 17). The next task is the documentation of the test plan, the S&E analyses results, and the proposed SOP(s) into a decision package for the formal approval process (Decision H and I) described earlier. After approval, the preparations for the execution of the plans for the test, facility or activity continue as presently until the system startup stage is reached.

If the answer to Decision G is "No" the proposed project may require additional analyses to identify alternative actions to reduce the S&E risks to acceptable level (additional effort in Task 15.) Another reason for a "No" answer may be that the environmental effects require consideration to decide if they might require an environmental assessment (EA) process to be completed for the project (Decision J.)

If an EA is not needed, the approval process (Decision H and I) can proceed as described above. If an EA is needed, several additional decisions and tasks are required.



Depending on the scope, complexity and risks of the project the funding of an EA may be necessary. If the Sponsor will not fund the EA (Decision K) and if NAVSWC elects not to fund the EA, the consequences are that the project will have to be terminated unless it is changed to reduce the objectionable environmental effects.

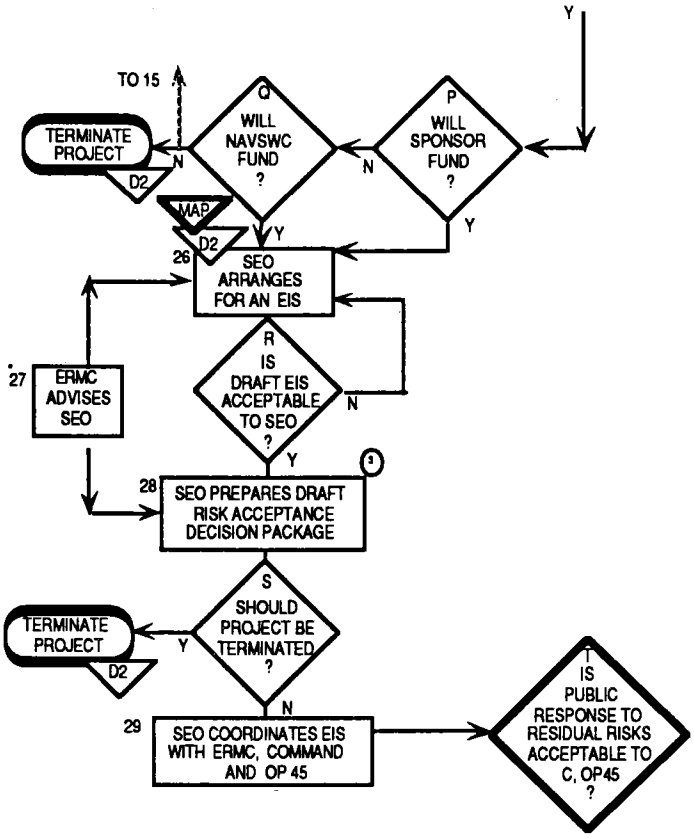
When funding is available, the initiating Branch or Division Head overseeing the project coordinates (Task 20) the elements and scope of the EA with SEO, Legal and OPA staff members and with W staff if appropriate, to define the system parameters to be addressed by the EA. After the system parameters are established, the SEO will arrange for the EA to be prepared (Task 21) and coordinated (Task 22) in accordance with then-current NAVSWC and Navy requirements.

2.2.8 Environmental Impact Statement

Upon completion of the EA, before off-station processing is initiated, the Chairman of the EMC will inform Command of the findings. (Task 25.) After the results of the EA are available, the SEO will then decide if an Environmental Impact Statement is required for the project (Decision M) If the answer is "N" the test plan and decision package can be processed as described earlier for departmental SED and SEO approvals (Decisions N and O.)

If an Environmental Impact Statement is required, that decision usually escalates the level of the effort for S&E tasks very substantially. The funding requirements will increase, and additional funds will usually have to be negotiated. If funding is not made available (Decisions P and Q) the project will terminate at that point unless other options can be found to reduce the environmental impact or safety risks. If the project is terminated the REIT database is updated and mastered. If the EIS is funded, the SEO arranges for an EIS to be prepared (Task 26.) The draft EIS is coordinated with the Environmental Management Committee (EMC), and approved by the SEO when completed satisfactorily (Tasks 27, Decision R.) After the EIS is approved, the SEO will prepare a preliminary risk acceptance decision package for the project, in consultation with the initiating department and the EMC, for use in processing the Draft EIS Task 28. At this point, the project may be terminated if the prospects for eventual approval of the project are dim. (Decision S)

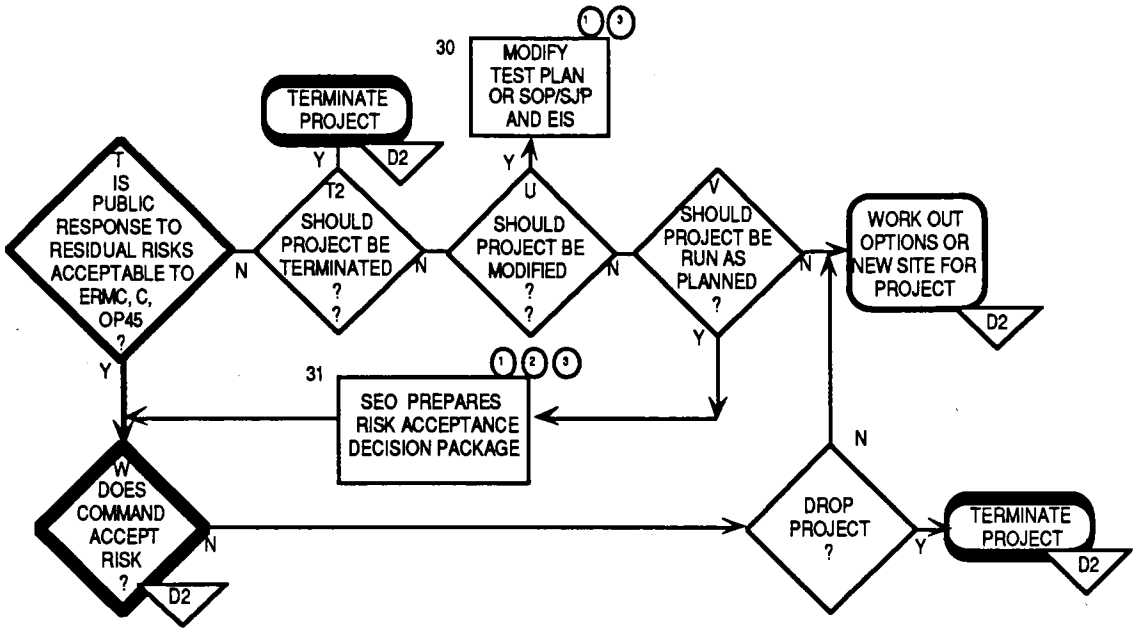
The decision package prepared by SEO (Task 28) is the documentation that will be coordinated with the EMC, C, OP45. During the preparation of that decision package, an S&E review decision should be made to determine whether the project should be terminated, rather than proceeding with the remainder of the EIS process, including the public involvement (Decision S.) If the project is not terminated, the coordination required by OPNAVINST 5090 will be progressed to a conclusion (Task 29.) By the conclusion of that process, the nature of the public response to the risks and the acceptability of that response to the Navy will be discernible.



If the public's reaction is objectionable, (Decision T), a decision whether to terminate the project, modify it or continue to press for the project as planned is required Decisions T2, U, V.) Depending on the decision, it may be necessary to modify the plans to make the project acceptable (Task 30), or if the is to proceed, the next task is for the initiating Department to prepare the Final Project Acceptance Decision package (Task 31.) This package will include, in addition to any non-S&E coordination documents required for project approval, the project description(s) on which the S&E risks were identified; a list of S&E risks and options for their elimination or control; exposures to the risks; risk levels with and without planned controls; appropriate SOPs or SJPs; any EAs or EISs; S&E signoffs; and upon request safety trade-offs.

2.2.9 Command approval.

After Command reviews the final decision package from Task 31, containing all the S&E risks and other considerations for the project, Command can still drop the project or encourage other options. However, Decision W is the final go/no go decision point for the plans IF the S&E risks actually materialize as predicted. After this decision, the S&E functions shift from predictive technical S&E risk assessment support to a monitoring function that will provide information to determine if the risks are as predicted.



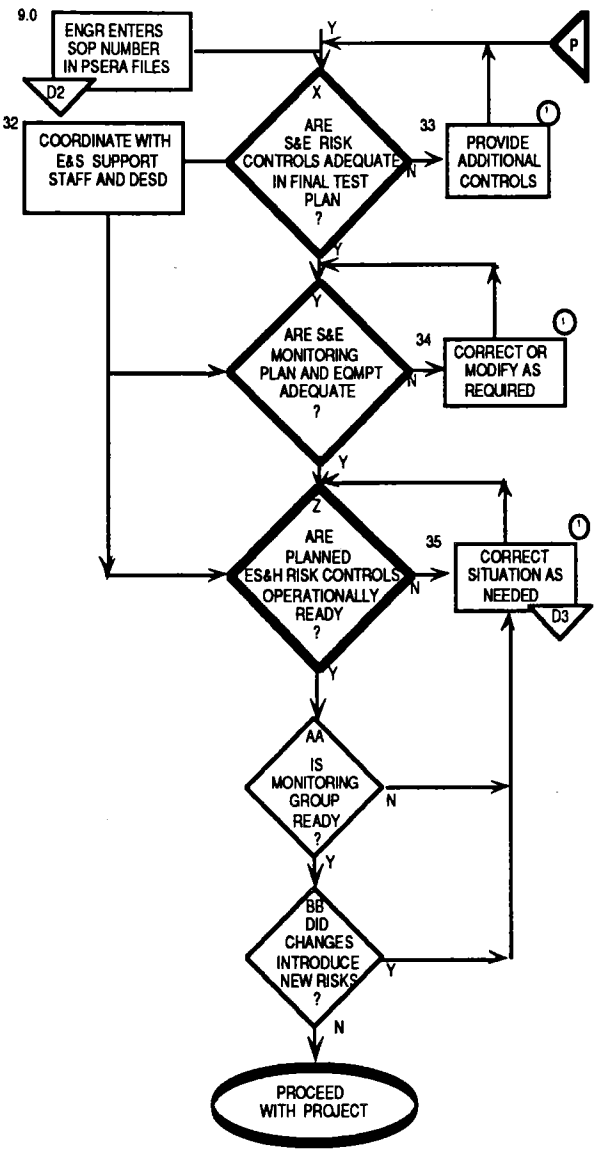
2.2.10 Post-approval functions.

Final plans for projects approved at the Departmental and SEO (transfer symbol P) or Command levels (From Decision W) should be coordinated (Task 32) with SEO staff to ensure that the risk controls selected in the final designs or test plans satisfy predicted S&E risk control requirements Decision X.) If uncertainties or ambiguities are observed, additional controls should be considered (Task 33.)

The final project plan and designs should be reviewed and coordinated with S&E staff to verify that the monitoring plan and equipment are suitable for the project, as proposed, that the the equipment is properly specified and available, and that the personnel are adequately trained or certified to operate it (Decision Y.) Use of NAVSWCINST 5100.6b is suggested for guidance to verify that the equipment actually acquired is in compliance with that instruction. If observations indicate corrective action is needed, it should be taken (Task 34.)

Prior to startup of any projects, an operational readiness check of safety and environmental control equipment should be completed to determine if they are in fact operationally ready (Decision Z.) This check should be performed in coordination with S&E staff, when commensurate with the predicted risks. The level of effort and degree of care for each of these checks should be tailored to the level of risk if the controls are not functioning rather than the controlled risk level. Any deficiencies observed should be corrected as needed, or a waiver must be processed.

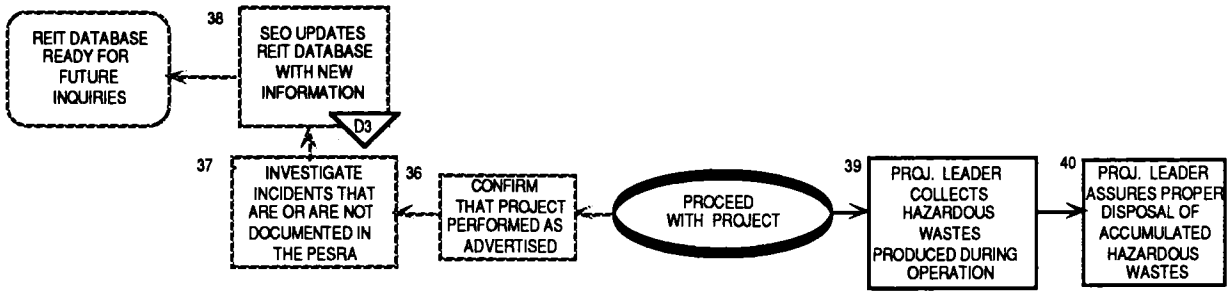
The final project plan and designs should be reviewed and coordinated with S&E staff to verify that the monitoring plan and equipment are suitable for the project, as proposed, that the the equipment is properly specified and available, and that the personnel are adequately trained or certified to operate it (Decision Y.) Use of NAVSWCINST 5100.6b is suggested for guidance to verify that the equipment actually acquired is in compliance with that instruction. If observations indicate corrective action is needed, it should be taken (Task 34.)



Prior to startup of any projects, an operational readiness check of safety and environmental control equipment should be completed to determine if they are in fact operationally ready (Decision Z.) This check should be performed in coordination with S&E staff, when commensurate with the predicted risks. The level of effort and degree of care for each of these checks should be tailored to the level of risk if the controls are not functioning rather than the controlled risk level. Any deficiencies observed should be corrected as needed, or a waiver must be processed.

Additional S&E Functions.

Two S&E functions, in addition to the planning readiness and monitoring functions, require consideration during the S&E risk management processes. The first function is to control hazardous wastes resulting from a project or system operation. NAVSWC's hazardous materials and waste management instructions require implementation for all projects. Tasks 39 and 40 are shown on the S&E Master Plan to reduce the possibility of overlooking these functions during and after a project or system operation. Part of the analysis tasks 1-6 is to consider these two programs and their objectives, and to ensure that any potential risks involving these materials is identified and eliminated or controlled. The project leader is shown as performing these control-oriented tasks, since they have first-hand knowledge and control of what is done.



The second function is to document the successful performance of a project or system according to the S&E predictions made for it. The documentation is a part of the process of building a knowledge asset for NAVSWC over time. This requires various inputs, including supervisor

comments about lessons observed (if any), possible job safety reports or mishap reports if there is a mishap, or other sources feeding into a process that will look for these kinds of inputs, and channel them to the REIT system databases in a timely manner. An audit checklist is attached (Attachment 3) for this purpose. This is a primary feedback mechanism with which project or system operations can be adjusted through experiences with operations.

The process for capturing this data should involve the departmental SED and the SEO staff, which manages the REIT database system.

2.2.12 Documentation

The Master Plan provides for documentation of analyses, controls and risk acceptance decisions during the S&E management process. The instrument for that documentation and instructions for use of the instrument are contained in the User Guide for the REIT system on NICCS/PEP, Attachment 4. The User Guide provides needed guidance for performing and documenting the risk assessment tasks introduced by this White Oak S&E Risk Management Master Plan. The Guide provides convenient tools to use while doing the energy trace, risk definition, risk level assessment coding and control option evaluation steps of the Master Plan.

The contents of a Risk Acceptance Decision Package that will be prepared under the White Oak S&E Risk Management Master Plan includes the elements described in the Plan. Those elements are a decision page describing the decision and providing for a yes or no decision; a project description flow chart; a hazard list produced from the REIT database entries; an Environmental Assessment or Environmental Impact Statement if required; and an SOP to address the safety and environmental risks on the hazard list.

2.2.11 Managing change.

Changes are to be processed as described above.

To help detect unauthorized changes to an activity or S&E risk management program, performance audits for both are provided to permit self-auditing by managers and supervisors. Independent audits of a Department's safety and environmental risk management process by the Safety and Environmental Office is also provided. The audit procedure is described in Attachment 3. The Checklists provides a basis for allowing different interested parties, ranging from managers and supervisors to independent auditors to review management and technical performance under the White Oak S&E Risk Management Master Plan.

2.3 IMPLEMENTATION OF PLAN

The Draft NAVSWCINSTR White Oak S&E Risk Management Master Plan provides the documentation for the Center to implement the White Oak S&E Risk Management Master Plan. When adopted, implementation of the Plan can begin.

Implementation of the plan is anticipated to begin with the preparation of revised task and job descriptions, and the recruitment, assignment and training of the collateral duty Safety and Environmental Designees (SEDs). When in place, these SEDs would initiate application of the plan to new projects at White Oak, assisting project staff in its application both procedurally and technically, with support from the Safety and Environmental Office. It is envisioned that knowledge and skill training of SEDs in S&E technical procedures would continue intermittently for up to a year. Until the SEDs are in place, the Safety and Environmental office would have to work with the Departments' technical staff to implement the plan on new projects.

As experience builds, the process would be applied to existing activities which could utilize the hazard lists resulting from new project analyses. The primary goal of this effort would be to ascertain the residual risks which exist in existing operations.

During the project, it was observed that most of the Departments use their own project identification scheme that is usually unique in one or more details. While apparently insignificant, if that creates problems with database utilization practices, the Safety and

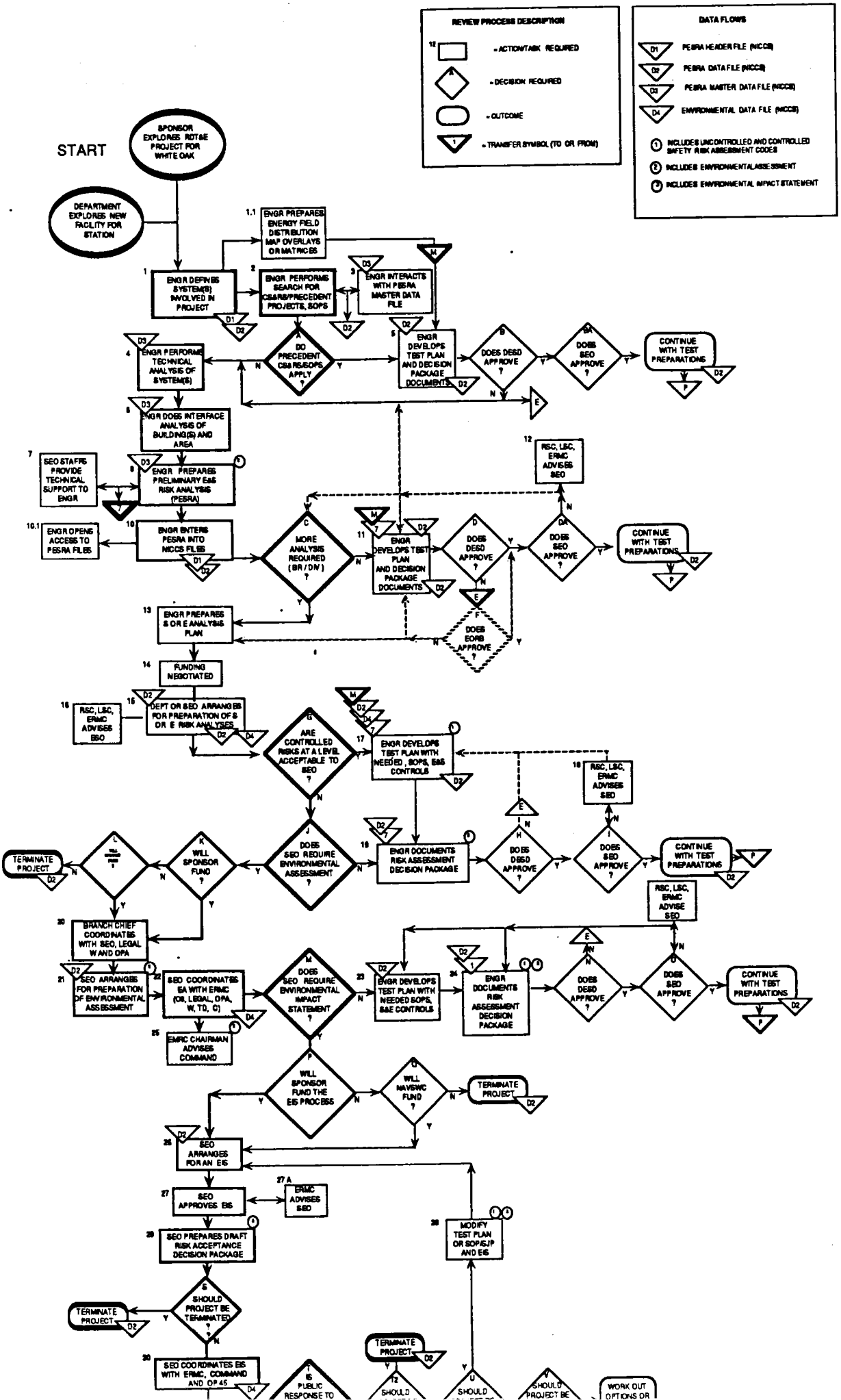
Environmental Officer may wish to establish a uniform project identification scheme suitable for all Departments to use for the S&E REIT databases.

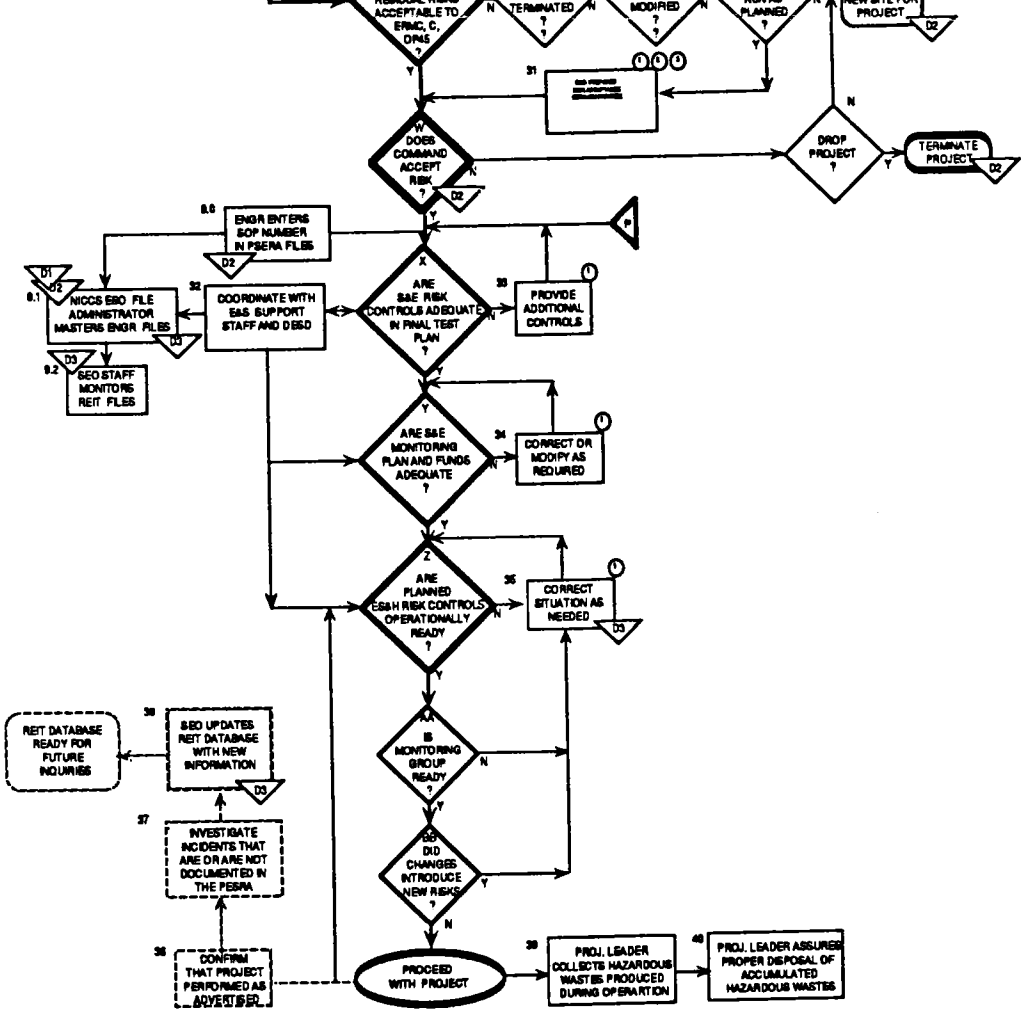
NAVSWC- WHITE OAK
SAFETY AND ENVIRONMENTAL
RISK MANAGEMENT MASTER PLAN

VOLUME IV

Attachment 1

S&E RISK MANAGEMENT MASTER PLAN


REVIEW PROCESS DESCRIPTION
= ACTION/TASK REQUIRED
= DECISION REQUIRED
= OUTCOME
= TRANSFER SYMBOL (TO OR FROM)
DATA FLOWS
D1 PESRA HEADER FILE (NICCS)
D2 PESRA DATA FILE (NICCS)
D3 PESRA MASTER DATA FILE (NICCS)
D4 ENVIRONMENTAL DATA FILE (NICCS)
1 INCLUDES UNCONTROLLED AND CONTROLLED SAFETY RISK ASSESSMENT CODES
2 INCLUDES ENVIRONMENTAL ASSESSMENT
3 INCLUDES ENVIRONMENTAL IMPACT STATEMENT
START
SPONSOR EXPLORES NOTAE PROJECT FOR WHITE OAK
DEPARTMENT EXPLORES NEW FACILITY FOR STATION
1 ENGR DEFINES SYSTEM(S) INVOLVED IN PROJECT
1.1 ENGR PREPARES ENERGY FIELD DISTRIBUTION MAP OVERLAYS OR MATRICES
2 ENGR PERFORMS SEARCH FOR CSARS/PRECEDENT PROJECTS, SOPS
3 ENGR INTERACTS WITH PESRA MASTER DATA FILE
A DO PRECEDENT CSARS/SOPS APPLY ?
4 ENGR PERFORMS TECHNICAL ANALYSIS OF SYSTEM(S)
5 ENGR DEVELOPS TEST PLAN AND DECISION PACKAGE DOCUMENTS
B DOES DESD APPROVE ?
BA DOES SEO APPROVE ?
CONTINUE WITH TEST PREPARATIONS
6 ENGR DOES INTERFACE ANALYSIS OF BUILDING(S) AND AREA
7 SEO STAFFS PROVIDE TECHNICAL SUPPORT TO ENGR
8 ENGR PREPARES PRELIMINARY S&E RISK ANALYSIS (PESRA)
10 ENGR ENTERS PESRA INTO NICCS FILES
10.1 ENGR OPENS ACCESS TO PESRA FILES
C MORE ANALYSIS REQUIRED (SR / DR) ?
11 ENGR DEVELOPS TEST PLAN AND DECISION PACKAGE DOCUMENTS
D DOES DESD APPROVE ?
DA DOES SEO APPROVE ?
12 RSC, LSC, ERMC ADVISES SEO
CONTINUE WITH TEST PREPARATIONS
13 ENGR PREPARES S OR E ANALYSIS PLAN
E
F DOES EORB APPROVE ?
14 FUNDING NEGOTIATED
15 RSC, LSC, ERMC ADVISES SEO
16 DEPT OR SEO ARRANGES FOR PREPARATION OF S OR E RISK ANALYSES
G ARE CONTROLLED RISKS AT A LEVEL ACCEPTABLE TO SEO ?
17 ENGR DEVELOPS TEST PLAN WITH NEEDED , SOPS, S&E CONTROLS
18 RSC, LSC, ERMC ADVISES SEO
J DOES SEO REQUIRE ENVIRONMENTAL ASSESSMENT ?
19 ENGR DOCUMENTS RISK ASSESSMENT DECISION PACKAGE
H DOES DESD APPROVE ?
I DOES SEO APPROVE ?
CONTINUE WITH TEST PREPARATIONS
RSC, LSC, ERMC ADVISE SEO
K WILL SPONSOR FUND ?
L
TERMINATE PROJECT
20 BRANCH CHIEF COORDINATES WITH SEO, LEGAL W AND DPA
21 SEO ARRANGES FOR PREPARATION OF ENVIRONMENTAL ASSESSMENT
22 S&D COORDINATES EA WITH ERMC (CR, LEGAL, DPA, W, TD, C)
25 ERMC CHAIRMAN ADVISES COMMAND
M DOES SEO REQUIRE ENVIRONMENTAL IMPACT STATEMENT ?
23 ENGR DEVELOPS TEST PLAN WITH NEEDED SOPS, S&E CONTROLS
24 ENGR DOCUMENTS RISK ASSESSMENT DECISION PACKAGE
N DOES DESD APPROVE ?
O DOES S&D APPROVE ?
CONTINUE WITH TEST PREPARATIONS
P WILL SPONSOR FUND THE EIS PROCESS
Q WILL NAVSWC FUND ?
TERMINATE PROJECT
26 SEO ARRANGES FOR AN EIS
27 SEO APPROVES EIS
27 A ERMC ADVISES SEO
28 MODIFY TEST PLAN OR SOPS/JP AND EIS
29 SEO PREPARES DRAFT RISK ACCEPTANCE DECISION PACKAGE
S SHOULD PROJECT BE TERMINATED ?
TERMINATE PROJECT
30 SEO COORDINATES EIS WITH ERMC, COMMAND AND OPNAV
T IS PUBLIC RESPONSE TO
TERMINATE PROJECT
U SHOULD
V SHOULD PROJECT BE
WORK OUT OPTIONS OR



ACRONYMS

ENGR = TEST OF DESIGN OR PROJECT ENGINEER OR PROJECT SCIENTIST OR TEST DIRECTOR

BR/DIV(HD) = BRANCH/DIVISION HEAD

EORB = EXPERIMENTAL ORDNANCE REVIEW BOARD

ERMC = ENVIRONMENTAL RISK MANAGEMENT COMM

LSC = LASER SAFETY COMMITTEE

SEO = SAFETY AND ENVIRONMENTAL OFFICER

S&SG = S&SO SAFETY SUPPORT GROUP

ESG = S&EO ENVIRONMENTAL SUPPORT GROUP

RSC = RADIATION SAFETY COMMITTEE

DSSA = DEPARTMENT SAFETY & ENVIRONMENTAL DESIGNEE

PESRA = PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT

NICCS = NAVSWC INFORMATION COMMAND AND CONTROL SYSTEM (PEP)

Figure 2. ANALYSIS AND REVIEW PROCESS

NAVSWC WHITE OAK
SAFETY AND ENVIRONMENTAL RISK MANAGEMENT MASTER PLAN

Prepared by Events Analysis, Inc.
Revision 13, 5/20/91

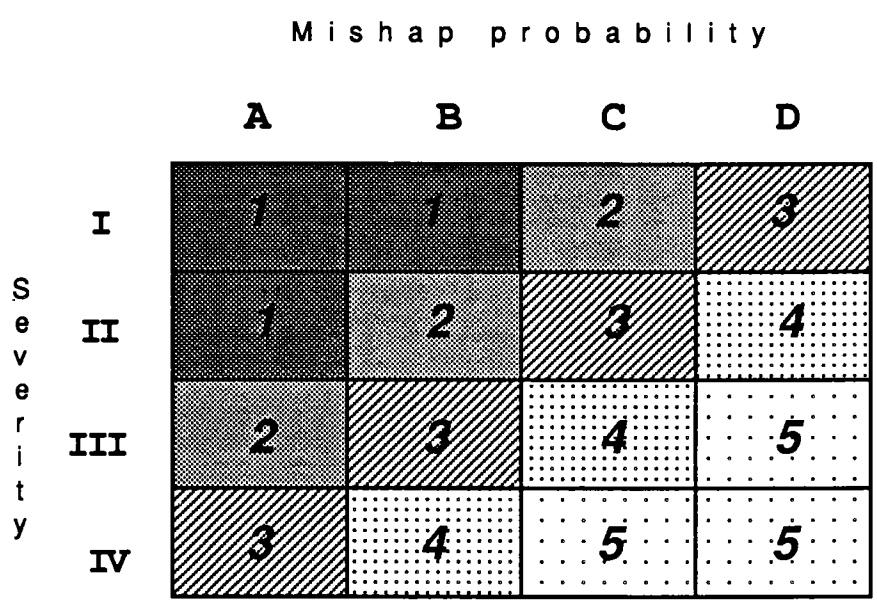
NAVSWC- WHITE OAK
SAFETY AND ENVIRONMENTAL
RISK MANAGEMENT MASTER PLAN

VOLUME IV

Attachment 2.

MATRICES OF WHITE OAK S&E RISK LEVEL ACCEPTANCE DECISION ROLES

RISK ASSESSMENT CODE



RISK ACCEPTANCE AUTHORITY

The following table describes the highest residual (controlled) risk which may be accepted at various Management Levels in the Chain of Command. For example, a Branch Head may not accept a residual RAC 5 risk unless the uncontrolled risks is a RAC 4 or 5.

RISK ASSIGNED			
Uncontrolled	Controlled	**SAFETY RISKS**	**ENVIRONMENTAL RISKS**
RAC 1	RAC 1	Command	Command
RAC 2	RAC 2	Safety and Environmental Officer	Safety and Environmental Officer
RAC 2	RAC 3	Department Heads	Safety and Environmental Officer
RAC 3	RAC 4	Division Heads	Department Heads
RAC 4	RAC 5	Branch Heads	Division Heads

NAVSWC- WHITE OAK
SAFETY AND ENVIRONMENTAL
RISK MANAGEMENT MASTER PLAN

VOLUME IV

Attachment 3.

S&E Risk Management Program Audit Checklists

S&E RISK MANAGEMENT PROGRAM AUDIT CHECKLISTS

AUDIT CODES

Enter a code in each box preceding each question, based on the answer to the question.

Action Column (A) Codes:		Timing Column (T) Codes	
0	Assign 0 when answer is fully satisfactory, without any reservations. Nothing needs to be done.	I	Immediate action: high risk - a serious incident is so likely that the risk justifies urgent action.
1	Assign 1 when answer is acceptable, but some action by the person responding would be desirable.	P	Priority action: moderate risk - an significant incident could occur fairly soon if not fixed, and fix should be scheduled in the near future.
2	Assign a 2 when answer(s) indicate action and follow-up by Command or Command's designee is needed to resolve a particular situation.	R	Routine action: low risk, but action should be planned in this area as routine schedules permit
		N	No factor; use with 0 action code.

PART I. SENIOR MANAGEMENT SELF-AUDIT CHECKLIST

1.0 S&E Risk Management Program Management.

	Action	Timing	
1.	❑	❑	Do I understand the overall S&E Risk Management Program philosophy, strategies, policy, objectives, scope, responsibilities and actions required of me?
2.	❑	❑	Do my supervisors understand the overall S&E Risk Management Program philosophy, strategies, policy, objectives, scope, responsibilities and required actions?
3.	❑	❑	Do my supervisors understand their specific responsibilities and duties under the S&E Risk Management Program, including use of risk acceptance decision packages?
4.	❑	❑	Is the level of authority I have delegated to my supervisors to accept risks appropriate for their level of responsibilities and capabilities under NAVSWCINST policies?
5.	❑	❑	Are the resources available to my supervisors adequate for them to discharge their S&E Risk Management responsibilities?
6.	❑	❑	Have I developed and disseminated criteria I will use to measure supervisors' performance with respect to the S&E Risk Management Program performance?
7.	❑	❑	Do my supervisors understand the criteria I will use to measure their performance with respect to the S&E Risk Management Program?
8.	❑	❑	Do my supervisors routinely monitor and track their own performance with respect to the S&E Risk Management Program elements?
9.	❑	❑	Do my supervisors understand how changes, projects, proposals and contractor goods or services can affect our S&E Risk Management Program efforts?
10.	❑	❑	Are my supervisors aware of how the operations and activities of tenant organizations affect our S&E Risk Management Program efforts?
11.	❑	❑	Are my supervisors aware of how individual projects of client organizations or contractors may affect our S&E Risk Management Program efforts?
12.	❑	❑	Are my supervisors aware of and do they use the support services available to assist them in discharging their S&E Risk Management Program responsibilities?

2.0 Standard Operating Procedures (SOP/SIP)

	Action	Timing	
13.	❑	❑	Have my supervisors systematically identified, documented and prepared plans for eliminating or managing the the risks posed by each change or hazardous activity or operation under their control and used risk acceptance decision packages where needed?

14. ❑ ❑ Have my supervisors prepared an SOP/SJP for each S&E risk in operations under their control?

15. ❑ ❑ Have I ensured that each of these SOP/SJP's has been reviewed and approved by the appropriate level of my organization and other organizations exposed to the risk?

16. ❑ ❑ Have the S&E Office and S&E Designee reviewed and concurred with our SOP/SJP's?

17. ❑ ❑ Have the necessary resources been provided to implement the SOP/SJPs?

18. ❑ ❑ Have all SOP/SJP personnel training and certification requirements been met?

19. ❑ ❑ Have all SOP/SJPs been adequately implemented and validated with the employees?

20. ❑ ❑ Do my supervisors routinely monitor conformance with SOP/SJPs?

21. ❑ ❑ Was an assessment of risk using the Navy RAC made and documented for the remaining system life, as appropriate, in preparation for each SOP/SJP?

22. ❑ ❑ Are my SOP/SJP hazard control procedures in accordance with the latest NAVSWC SOP/SJP Instruction, and do they include a hazard or risk list?

23. ❑ ❑ Do my supervisors have available to them an inventory of our organization's Chemical/Biological/Radioactive (C/B/R) agents and approved chemicals list to help ensure the development of appropriate SOP/SJPs and Chemical Hygiene Plans?

24. ❑ ❑ Do my supervisors routinely check their inventory and approved chemical list when purchasing C/B/R agents to determine if new or modified SOP/SJPs are required?

25. ❑ ❑ Is the C/B/R inventory modified promptly as changes to my operations or activities occur?

26. ❑ ❑ Has the C/B/R inventory been verified and balanced within the past 12 months?

27. ❑ ❑ Have I made model SOP/SJPs available to my supervisors to help them develop their own SOP/SJPs?

28. ❑ ❑ Do my supervisors understand what they must do before waiving the requirement for a specified SOP/SJP?

29. ❑ ❑ Have I received a supervisor's request for a waiver of an SOP/SJP during the past 12 months?

3.0 Workplace Industrial Hygiene Monitoring

Action Timing

30. ❑ ❑ Do I know which of my workplace locations/activities requires periodic monitoring by the S&E Officer or S&E Designee?

31. ❑ ❑ Do I have a method for ensuring that my workplaces/activities are monitored as required?

32. ❑ ❑ Have all C/B/R locations under my control been subjected to workplace monitoring during the past 12 months?

4.0 Employee Exposure Monitoring

Action Timing

33. ❑ ❑ Have my supervisors compiled listings of personnel by agent specific and generic exposure for reporting to the S&E Risk Management Division within the past 12 months?

34. ❑ ❑ Have my supervisors ensured all personnel required to receive scheduled or periodic examinations have received the same?

35. ❑ ❑ Have I reviewed the results of medical monitoring within the past 12 months?

36. ❑ ❑ Do individual personnel receive notification of medical examination findings on a routine basis?

5.0 Employee Hazard Communication

Action Timing

37. ❑ ❑ Have my supervisors obtained a Material Safety Data Sheet (MSDS) for each C/B/R agent under their control, and made it accessible upon request by anyone?

38. ❑ ❑ Have my supervisors communicated to affected personnel the information contained on the MSDS?

39. ❑ ❑ Has agent-specific training been provided to all affected personnel within the past 12 months?

40. ❑ ❑ Are the results of workplace exposure monitoring disseminated to affected personnel on a routine basis?

41. ❑ ❑ Do my supervisors ensure that involved personnel understand what must be done to control, protect and monitor exposure to C/B/R agents and the importance of following established SOP/SJPs?

42. ❑ ❑ Are all C/B/R agents received from Supply properly labeled with respect to the controls which must be observed in their use?

6.0 Employee Training/Certification

Action Timing

43. ❑ ❑ Have my supervisors determined personnel requirements in terms of training, certification, and job assignment criteria, etc., for all operations under their control?

44. ❑ ❑ Do my supervisors update personnel requirements on a scheduled or routine basis?

45. ❑ ❑ Do my supervisors ensure that required training is received?

7.0 Risk Assessment/Trade Off Analysis

Action Timing

46. ❑ ❑ Have I communicated to my supervisors the importance of performing risk assessments of changes before they are implemented? As soon as possible after the identification of a hazard?

47. ❑ ❑ In performing risk analyses, do my supervisors and staff use methods that minimize errors and omissions in the discovery, definition, documentation and control of the level of risk?

48. ❑ ❑ In performing risk analyses, do my supervisors adequately balance S&E considerations with other trade-offs such as performance, quality, schedule, and budget constraints?

49. ❑ ❑ Do my supervisors adequately understand their level of authority with respect to accepting S&E risks?

50. ❑ ❑ Do my supervisors adequately document risk acceptance decisions?

51. ❑ ❑ Have I made, reviewed or otherwise been involved in an S&E risk acceptance decision within the past 12 months?

52. ❑ ❑ Do my supervisors assess adequately the risk involved with new or changed facilities, materials, equipment and operations?

8.0 Investigations/Lessons Learned

Action Timing

53. ❑ ❑ What methodology do my supervisors use to investigate mishaps or safety complaints?

54. ❑ ❑ Do my supervisors investigate all mishaps, near misses and safety complaints in a timely fashion to identify what happened and feasible corrective action options?

55. ❑ ❑ Do my supervisors understand what a reportable mishap is?

56. ❑ ❑ Do my supervisors inform the Chain of Command about near misses and reportable mishaps?

57. ❑ ❑ Do my supervisors take timely corrective actions as a result of approved mishap investigation reports?

58. ❑ ❑ Do my supervisors get and act on crossfeed information concerning mishaps which have occurred in other NAVSWC Departments?

59. ❑ ❑ Do my supervisors encourage the use of hazard databases for documenting and retrieving hazard analyses and previous "lessons leaned" during all investigations?

60. ❑ ❑ Have I organized a procedure to review and act on investigation report findings and recommendations?

61. ❑ ❑ Have I reviewed a mishap investigation report within the past 12 months?

9.0 Workplace Inspections-Hazard Abatement

Action Timing

62. ❑ ❑ Do my supervisors routinely monitor our workplaces to verify predicted hazards and look for new hazards and risks?

63. ❑ ❑ Do supervisors document and monitor required actions on a hazard abatement plan?

64. ❑ ❑ Have I reviewed our hazard abatement plan and procedures within the past 12 months?

65. ❑ ❑ Do my supervisors post the required notices to employees in our workplaces regarding uncorrected hazards, and remove them when no longer needed?

10.0 Employee Hazard Reporting

Action Timing

65. ❑ ❑ Do my supervisors encourage our employees to identify workplace hazards?

66. ❑ ❑ Are the appropriate hazard reporting forms available in all our workplaces?

67. ❑ ❑ Do my supervisors take appropriate action in response to employee hazard reports?

68. ❑ ❑ Have I reviewed an employee hazard report in the past 12 months?

11. 0 Personal Protective Equipment

Action Timing

69. ❑ ❑ Are my supervisors aware of all requirements to use personal protective equipment (PPE) in our workplaces?

70. ❑ ❑ Do we have on hand all required items of PPE and is it used as required?

71. ❑ ❑ Do my supervisors ensure that our employees know how and when to use PPE?

72. ❑ ❑ Have my supervisors established a program for the routine maintenance required for our PPE?

12.0 Emergencies

Action Timing

73. ❑ ❑ Have we reviewed, tested and updated, as needed, our emergency response plan and equipment in the last 12 months? Have we practiced responses with all our personnel? Are our procedures for handicapped personnel adequate?

1.0 S&E Risk Management Program Management.

Action Timing

Part II. LINE MANAGEMENT AUDIT CHECKLIST

100. ❑ ❑ Do I understand the key concepts, principles and practices, and the management and engineering tasks required to achieve a planned level of safety.

101. ❑ ❑ Do I have a clear understanding of the overall purpose of the S&E Risk Management Program and its specific philosophies, strategies, policies, objectives and duties?

102. ❑ ❑ Do my people understand the overall S&E Risk Management Program, policies and objectives and have I explained the specific S&E risk management approaches, objectives and requirements to each of my staff members?

103. ❑ ❑ Do I have adequate resources for satisfying my S&E Risk Management Program responsibilities?

104. ❑ ❑ Have I been provided the authority I need to implement my S&E Risk Management Program responsibilities and duties?

105. ❑ ❑ Do I have a clear understanding of the limits of my authority, particularly with respect to the acceptance of S&E risks?

106. ❑ ❑ Do my staff and operating employees have a clear understanding of the limits of their authority to introduce changes and accept S&E risks?

107. ❑ ❑ Do I have a clear understanding of how my performance with respect to the S&E Risk Management Program will be rated?

108. ❑ ❑ Do my people understand the criteria I will use to rate their performance with respect to the S&E Risk Management Program?

109. ❑ ❑ Do I analyze individual projects, proposals or contracts for goods or services to understand their potential ability to affect the safety and environmental risks to my organization and the Center?

110. ❑ ❑ Do I have a clear understanding of how the operations and activities of co-located or nearby facilities or organizations can affect my operation?

111. ❑ ❑ Do I have a clear understanding of and use the support services available to assist me in the performance of my S&E Risk Management Program responsibilities?

112. ❑ ❑ Do I have all the technical data and analysis skills I need to carry out my S&E Risk Management Program responsibilities?

113. ❑ ❑ Do I routinely track the performance of my people with respect to risk identification, assessment and control?

114. ❑ ❑ Do I routinely monitor the results of staff S&E analyses , inspections and audits and ensure action if required?

115. ❑ ❑ Do I routinely track performance on suspensed S&E follow-up action items?

116. ❑ ❑ Am I in conformance with S&E Risk Management Program milestone and budget estimates?

2.0 Standard Operating Procedures (SOP/SJP)

Action Timing

117. ❑ ❑ Has an SOP/SJP been prepared for each hazardous operation under my control, for its entire life cycle?

118. ❑ ❑ Do my SOP/SJPs for each operation address each risk specified by the S&E Risk Management Program NICCS data and SOP/SJP model?

119. ❑ ❑ Do the SOP/SJP requirements reflect the level of risk indicated by the Navy Risk Assessment Code (RAC)?

120. ❑ ❑ Are the hazard control procedures recommended in conjunction with the SOP/SJPs based on the hazard control ratings specified in the latest NAVSWC SOP/SJP Instruction?

121. ❑ ❑ Do I have a current, up-to-date inventory of the Chemical, Biological or Radioactive (C/B/R) agents under my control upon which to base SOP/SJPs?

122. ❑ ❑ Have I updated this C/B/R inventory within the past 12 months?

123. ❑ ❑ Do I have a Material Safety Data Sheet (MSDS) for each C/B/R agent on the inventory to assist in preparing SOP/SJPs?

124. ❑ ❑ Do I routinely check the C/B/R inventory when purchasing or receiving C/B/R agents to determine if they are on the approved chemical list or if new or modified SOP/SJPs are required?

125. ❑ ❑ Do I update the C/B/R inventory as changes in my operations or activities occur?

126. ❑ ❑ Has the and S&E Designee (and where appropriate the S&E Officer) reviewed and concurred with the S&E SOP/SJPs I have prepared?

127. ❑ ❑ Has my management reviewed and approved each of my SOP/SJPs?

128. ❑ ❑ Have I briefed each of my staff members concerning the hazards and risks, and the SOP/SJPs that affect their operations or activities?

129. ❑ ❑ Has each of my staff acknowledged understanding the requirements of the SOP/SJPs?

130. ❑ ❑ Do I routinely monitor predicted hazards and conformance with SOP/SJPs?

131. ❑ ❑ Do I routinely contact the and S&E Designee to check on the availability of SOP/SJP models when preparing my own SOP/SJP?

132. ❑ ❑ Do I have a clear understanding of the procedures involved in waiving any requirements for an SOP/SJP?

133. ❑ ❑ Have I formally waived the requirements for any SOP/SJP within the past 12 months?

3.0 Workplace Industrial Hygiene Monitoring

Action Timing

135. ❑ ❑ Do I know which of my workplace locations/activities requires periodic monitoring by the S&E Office?

136. ❑ ❑ Do I have a systematic procedure for ensuring that my workplaces and activities are monitored as required?

137. ❑ ❑ Have all C/B/R locations and activities under my control been subjected to workplace monitoring during the past 12 months?

138. ❑ ❑ Do I ensure that my people cooperate with the and S&E Designee during workplace monitoring activities?

139. ❑ ❑ Do I routinely act to implement recommendations made as a result of workplace monitoring, in a timely fashion?

4.0 Employee Exposure Monitoring

Action Timing

140. ❑ ❑ Have I compiled a listing of personnel by agent specific and generic exposure for reporting to the S&E Officer and S&E Designee within the past 12 months?

141. ❑ ❑ Have I ensured that all personnel required to receive scheduled or periodic examinations have received them?

142. ❑ ❑ Have I reviewed the results of medical monitoring within the past 12 months?

143. ❑ ❑ Do individual personnel receive notification of medical examination findings on a routine basis?

144. ❑ ❑ Do I ensure that my people understand the results of medical monitoring?

5.0 Employee Hazard Communication

Action Timing

145. ❑ ❑ Do I have a MSDS for each C/B/R agent under my control?

146. ❑ ❑ Have I communicated to affected personnel the information contained on the MSDS?

147. ❑ ❑ Has agent specific training been provided to all affected personnel within the past 12 months?

148. ❑ ❑ Are the results of workplace exposure monitoring disseminated to affected personnel on a routine basis?

149. ❑ ❑ Am I confident that my people understand what must be done to control, protect and monitor exposure to C/B/R agents and the importance of following established SOP/SJPs?

150. ❑ ❑ Are all C/B/R agents received from supply properly labeled with respect to the controls which must be observed in their use?

151. ❑ ❑ Have I reviewed the C/B/R inventory for my operations within the past 12 months to ensure I have all the required MSDSs?

152. ❑ ❑ Do I routinely review the purchase/acquisition of C/B/R agents to ensure the appropriate MSDSs are obtained in a timely manner?

6.0 Employee Training/Certification \

Action Timing

153. ❑ ❑ Do I believe I have received adequate training to fulfill my safety responsibilities?

154. ❑ ❑ Have I identified all employee training/certification requirements specified in my operations, and in applicable SOP/SJPs?

155. ❑ ❑ Do I have a method to track employee progress toward training/certification requirements?

156. ❑ ❑ Are all my people current with respect to these training and certification requirements?

7.0 Risk Assessment/Trade-Off Analysis

Action Timing

157. ❑ ❑ Do I have a clear understanding of the different techniques available to assist me in identifying, assessing and controlling risks predictively?

158. ❑ ❑ For more complex problems, do I employ methods that minimize errors and omissions in the discovery, definition, documentation and control of the level of risk?

159. ❑ ❑ Have I performed a risk assessment for each hazard identified in my operations?

160. ❑ ❑ Do I have a clear understanding of the limits of my authority with respect to risk acceptance?

161. ❑ ❑ Do my people have a clear understanding of the limits of their authority with respect to introducing changes and risk acceptance?

162. ❑ ❑ Do I document my risk acceptance decisions so they are captured for future use?

163. ❑ ❑ Have I, during the past 12 passed on a risk acceptance decision to upper management for resolution?

164. ❑ ❑ If so, was the risk acceptance resolved to my expectations?

165. ❑ ❑ In determining whether or not to accept an S&E risk do I adequately balance S&E considerations with other trade-offs such as performance, quality, schedule, and budget constraints?

166. ❑ ❑ Do I assess adequately, efficiently and promptly the risk involved with new or changed facilities, materials, equipment and operations?

8.0 Accident Investigations/Lessons

Action Timing

167. ❑ ❑ Do I know the methods and techniques I need to know to do a competent investigation?

168. ❑ ❑ Do I investigate all safety complaints, mishaps and near misses in a timely fashion to determine what happened and the appropriate corrective actions?

169. ❑ ❑ Do I understand what a reportable mishap is?

170. ❑ ❑ Do I notify the and S&E Designee of reportable mishaps?

171. ❑ ❑ Do I always take corrective actions as a result of approved mishap investigation reports?

172. ❑ ❑ Have I received crossfeed information concerning mishaps which have occurred in other NAVSWC Departments?

173. ❑ ❑ If so, do I take action as appropriate as a result of this crossfeed information?

174. ❑ ❑ Do I submit all mishap reports to my supervisor for review and approval of the report findings and recommendations?

175. ❑ ❑ Do I routinely review the results of accident/near miss investigations with the affected members of my staff?

176. ❑ ❑ Do I routinely use the results of inspections, accident/near miss investigations and/or the lessons learned file or the NICCS Range Risk database when preparing/modifying SOP/SJPs?

9.0 Workplace Inspections-Hazard Abatement

Action Timing

177. ❑ ❑ Do I and my supervisors routinely monitor our workplaces to verify predicted hazards or identify new hazards or unauthorized changes?

178. ❑ ❑ Do we record and monitor required actions on a hazard abatement plan?

179. ❑ ❑ Have I reviewed our hazard abatement plan within the past 12 months?

180. ❑ ❑ Have I posted the required notices to employees in our workplaces regarding uncorrected hazards?

10.0 Employee Hazard Reporting

Action Timing

181. ❑ ❑ Do I encourage my people to identify workplace hazards by my words and actions?

182. ❑ ❑ Are the appropriate hazard reporting forms available in all my workplaces?

183. ❑ ❑ Have I taken appropriate action in response to employee hazard reports?

184. ❑ ❑ Have any of my personnel submitted an employee hazard report in the past 12 months?

11. Personal Protective Equipment

Action Timing

185. ❑ ❑ Am I aware of all requirements for my people to use personal protective equipment (PPE) in my workplaces?

186. ❑ ❑ Do we have on hand all required items of PPE, and encourage its use?

187. ❑ ❑ Am I confident that my people know how and when to use PPE?

188. ❑ ❑ Have I established a program for the routine maintenance required for our PPE?

189. ❑ ❑ Do my people routinely use the required PPE in accordance with my desires?

12.0 Emergencies

Action Timing

190. ❑ ❑ Have we reviewed, tested and updated, as needed, our emergency response plan and equipment in the last 12 months? Have we practiced responses with all our personnel? Are our procedures for handicapped personnel adequate?

Part III INDEPENDENT AUDIT CHECKLIST

1.0 S&E Risk Management Program Management.

Action	Timing	
201. ❑	❑	Has the overall purpose and objective of the S&E Risk Management Program been adequately conveyed to all personnel contacted?
202. ❑	❑	Has senior management set realistic goals and objectives with respect to the S&E Risk Management Program?
203. ❑	❑	Have these goals been met?
204. ❑	❑	Have all persons questioned demonstrated an adequate understanding of the S&E Risk Management Program?
205. ❑	❑	Has senior management reviewed the S&E Risk Management Program performance within the past 12 months?
206. ❑	❑	Has Command provided adequate resources for implementing the S&E Risk Management Program?
207. ❑	❑	Are all elements of the Center (e.g., Tenants and contractors) included in the S&E Risk Management Program program?
208. ❑	❑	Are contracts for goods and services routinely monitored for potential hazards and changes in risk levels?
209. ❑	❑	Are new and changing RDT&E projects analyzed for risks, and are the risks identified accepted at the properly level in the Chain of Command?
210. ❑	❑	Does the and S&E Designee provide adequate support to line organizations?

2.0 Standard Operating Procedures (SOP/SJP)

Action	Timing	
211. ❑	❑	Has each hazardous operation been identified?
212. ❑	❑	Is there a currently applicable SOP/SJP for each hazardous operation?
213. ❑	❑	Is the Chemical/Biological/Radiation(C/B/R) agents inventory routinely used to determine the need or adequacy of SOP/SJPs?
214. ❑	❑	Have requirements for any SOP/SJP been waived since the last audit?
215. ❑	❑	Have all SOP/SJPs been reviewed by the and S&E Designee , and where appropriate by the Range Safety Officer?

216. ❑ ❑ Have all SOP/SJPs been reviewed and approved and the residual risks accepted by the appropriate level of management?

217. ❑ ❑ Does the and S&E Designee maintain a master list of SOP/SJPs for control of periodic review requirements?

218. ❑ ❑ Are the line organizations using the model SOP/SJP provided by the and S&E Designee to guide them in developing their own SOP/SJPs?

219. ❑ ❑ Are SOP/SJPs in compliance with all applicable Navy, Federal and State standards?

220. ❑ ❑ Do the SOP/SJPs contain all required data elements?

3.0 Workplace Industrial Hygiene Monitoring

Action Timing

221 ❑ ❑ Has workplace monitoring of all areas employing C/B/R agents been performed since the last audit?

222. ❑ ❑ Has workplace monitoring been performed, by appropriately qualified and certified personnel?

223. ❑ ❑ Are equipment maintenance and calibration records available for instruments used during workplace monitoring?

224. ❑ ❑ Was all equipment used during workplace monitoring properly maintained and calibrated?

225. ❑ ❑ Are the results of workplace monitoring routinely and promptly conveyed to affected organizations and employees?

226. ❑ ❑ Are records of workplace monitoring adequately maintained?

227. ❑ ❑ Is the C/B/R inventory used to identify workplace monitoring requirements?

4.0 Employee Monitoring

Action Timing

228. ❑ ❑ Are all employees exposed to C/B/R agents included in the medical monitoring program?

229. ❑ ❑ Have all required examinations been given?

230. ❑ ❑ Are the results of medical monitoring routinely used to review and/or initiate job/task assignments?

231. ❑ ❑ Are the results of medical monitoring routinely and promptly conveyed to the affected personnel?

232. ❑ ❑ Are adequate records of employee monitoring maintained?

5.0 Hazard Communication

Action Timing

233. ❑ ❑ Is there an MSDS available for each Chemical/Biological/Radiation agent used in the observed unit?

234. ❑ ❑ Are Center requirements for MSDSs being met?

235. ❑ ❑ Is there an inventory of Chemical/Biological/Radiation agents for the observed unit?

236. ❑ ❑ Is the Chemical/Biological/Radiation inventory updated whenever a new C/B/R agent is procured?

237. ❑ ❑ Is the MSDS file cross-checked to the Chemical/Biological/Radiation inventory to assure completeness and accuracy?

238. ❑ ❑ Is the MSDS data used to train personnel involved with the specific agents?

239. ❑ ❑ Are copies of MSDSs available to all appropriate personnel?

240. ❑ ❑ Have all required personnel been informed as to the hazards of C/B/R agents in their workplaces?

241. ❑ ❑ Are all C/B/R agent and hazardous waste containers in observed workplaces properly labeled?

6.0 Employee Training/Certification

Action Timing

242. ❑ ❑ Are all S&E Risk Management Program related training and certification requirements identified?

243. ❑ ❑ Are the S&E Risk Management Program related training and certification requirements updated as personnel, activities and operations change?

244. ❑ ❑ Have all all personnel been provided training specific to their assigned tasks?

245. ❑ ❑ Has all required training been documented in personnel files?

7.0 Risk Assessment/Trade Off Analysis

Action Timing

246. ❑ ❑ Are risk assessments performed for all identified hazards?

247. ❑ ❑ Are risk assessments performed using approved techniques?

248. ❑ ❑ Are risk acceptance decisions made at the proper level of management?

249. ❑ ❑ Are risk acceptance decisions properly documented?

250. ❑ ❑ Do risk acceptance decisions give balanced consideration to S&E risks as well as schedule, budget, quality and mission constraints?

251. ❑ ❑ Is the risk assessed for new or changed facilities, material, equipment and operations?

8.0 Accident Investigation/Lessons Learned

Action Timing

252. ❑ ❑ Have all reportable mishaps been reported?

253. ❑ ❑ Has all required corrective action been taken or suspensed to the abatement log?

254. ❑ ❑ Are mishap "lessons learned" cross-fed to all interested organizations?

255. ❑ ❑ Are mishap reports reviewed by senior management?

256. ❑ ❑ Are results of mishap investigations routinely added to the lessons learned file?

257. ❑ ❑ Has senior management been involved in any mishap investigations since the last audit?

258. ❑ ❑ Is the lessons learned file routinely reviewed when preparing an SOP/SJP or planning a new or modified operation/facility?

9.0 Workplace Inspections-Hazard Abatement

Action Timing

259. ❑ ❑ Are all workplaces routinely monitored by qualified personnel?

260. ❑ ❑ Are the results of these inspections recorded on Deficiency Notices and a hazard abatement plan?

261. ❑ ❑ Has senior management reviewed the Center abatement plan within the past 12 months?

262. ❑ ❑ Are required notices regarding uncorrected hazards posted in all applicable workplaces?

10.0 Employee Hazard Reporting

Action Timing

263. ❑ ❑ Are employees aware of their right and responsibility to identify workplace hazards?

264. ❑ ❑ Are the appropriate hazard reporting forms available in all Center workplaces?

265. ❑ ❑ Has appropriate action been taken in response to employee hazard reports?

266. ❑ ❑ Has anyone submitted an employee hazard report in the past 12 months?

13. Personal Protective Equipment

Action Timing

267. ❑ ❑ Have all requirements for personnel to use personal protective equipment (PPE) been identified?

268. ❑ ❑ Are all required items of PPE on hand?

269. ❑ ❑ Is there a program for the required routine maintenance of PPE?

270. ❑ ❑ Do Center personnel routinely use required PPE?

12.0 Emergencies

Action Timing

271. ❑ ❑ Have personnel reviewed, tested and updated, as needed, our emergency response plan and equipment in the last 12 months? Have we practiced responses with all our personnel? Are our procedures for handicapped personnel adequate?

272. ❑ ❑ Do personnel know how to help the fire department if a fire occurs?

273. ❑ ❑ Do personnel know what I have to do in the event of a chemical or fuel spill?

274. ❑ ❑ Do personnel know when to fight a fire, and when to evacuate?

275. ❑ ❑ Would personnel recognize and know what to do if an explosion occurred on the base?

NAVSWC- WHITE OAK
SAFETY AND ENVIRONMENTAL
RISK MANAGEMENT MASTER PLAN

VOLUME IV

Attachment 4.

S&E Risk Management Database User Guide

USER GUIDE

FOR
SAFETY AND ENVIRONMENTAL
RISK MANAGEMENT PROGRAM
RISK AND ENERGY INVENTORY
TRACKING (REIT) SYSTEM

PREPARED FOR

NAVAL SURFACE WARFARE CENTER

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TABLE OF CONTENTS

GUIDANCE FOR USE OF THE

RISK AND ENERGY INVENTORY TRACKING SYSTEM

SYSTEM OBJECTIVES

The **Risk and Energy Inventory Tracking** (REIT) System is intended to serve as a tool for tracking and documenting the risks associated with test projects, energetic materials and directed energies and assist in safely managing energies at the various NAVSWC facilities.

This system is designed to:

- Enable persons who are considering and developing new projects or changes involving energetic materials and directed energies to identify and document safety and environmental risks that are expected to be associated with the project over its life cycle.

- Assist persons considering and developing new projects or changes involving energetic materials and directed energies by providing a database of previous risk analyses developed for projects conducted in the past.

- Provide an inventory of the safety and environmental concerns and relative risk levels associated with a new project or changes which can be used to assist in the development of project SOPs.

- Provide a historical database of the risk considerations used in the development of SOPs.

- Provide a basis for determining what energies may be present on specific NAVSWC facilities to help minimize the potential for energy conflicts which could result in unacceptable risks.

SYSTEM APPROACH

This system is designed to provide a valuable resource that will, over time, become an asset to the Center, its personnel and its Mission. As data accumulates in the system, the system will help the Center to tailor its risk abatement efforts to the risks that are reasonably foreseeable in a systematic manner. This will allow the Center to benefit by meeting statutory and Navy requirements in a cost-effective manner, by reducing the likelihood of omissions and oversights, minimizing redundant effort, and providing a means to effectively keep residual risks at acceptable levels.

The REIT system was installed on the NICCS/PEP network to provide the broadest possible access to Center technical personnel. While this inhibits the level of sophistication possible within the system design, the ease of access feature was considered to significantly outweigh reasons for using other configurations. The REIT system is considered to be an open system capable of documenting all foreseeable unclassified activities conducted at the Center and is designed to allow the addition of new data elements with a modest level of effort.

A major consideration in the design approach was to minimize new data that will be collected to satisfy the risk control needs of the Station. The basic premise was to link the REIT data system to the development the Standard Operating Procedures required for activities involving energetic materials and directed energies. As the database grows, the likelihood of finding similar risks associated with similar projects increases. This will help to minimize the amount of new effort required to document a new test project.

The REIT system is designed so that technical department personnel can identify the safety and environmental risks anticipated with their own projects. Through this procedure, the initial risk analysis is in the hands of those who are most familiar with the proposed or actual project.

SYSTEM DESCRIPTION

The REIT system consists of two user datafiles named PESHRA and PESHRAHDR.

PESHRAHDR is the file which contains the basic description of the project under study and other items of information such as the engineers name, phone number etc. The information contained in this file is entered only once per project studied and was designed to minimize redundant data entry in the REIT system.

The PESHRA file contains the basic risk identification and assessment information generated as a result of the preparer's study of the project situation. The information contained in this file relates to the types of events which may occur during the project process resulting in accidental damage or harm.

DATAFILE DESCRIPTIONS AND DATA ENTRY GUIDANCE

Header (PESHRAHDR) Datafile

Within the PESHRAHDR file are a series of fields which are designed to provide a basic description of the project under study. These fields are shown in a section titled as follows:

PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT SYSTEM PROJECT IDENTIFICATION FILE

This file contains four sections. The screens for each section are shown in Figures 1 through 4. The data fields in the PROJECT IDENTIFICATION FILE are defined following each screen.

Figure 1 Project Identification File, Project Description Screen

PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT SYSTEM
PROJECT IDENTIFICATION FILE

TPR NUMBER: ..... SOP NUMBER: .....

SCHEDULED FACILITY USE DATE: .....

PROJECT ID NUMBER: ..... PROJECT ENGINEERS DEPARTMENT CODE: .....

PROJECT ENGINEERS NAME: _____ _ _____ CODE: ___.....
FIRST MI LAST

PROJECT ENGINEERS PHONE: (___).....

PROJECT TITLE: .....

.....

PROJECT ITEM: .....

PROJECT LOCATION: .....

SECTOR ... GRID .... BUILDING NUMBER .....

ROOM NUMBER: .... PROJECT ENCLOSED: ....

THIS COMPLETES THE BASIC DESCRIPTIVE INFORMATION FOR THE PESHRA

1. TPR NUMBER:

This is the unique Project Planning record number that will be required at the time the project is presented to approving official. This number will be entered as soon as the decision has been made to perform the work and a number can be assigned.

2. SOP NUMBER:

This is the number of the Standard Operating Procedure or Special Job Procedure that will govern the performance of tasks on this project. Where more than one SOP/SJP is applicable, the number entered will be the SOP/SJP number that incorporates all other SOPs/SJPs by reference.

3. SCHEDULED FACILITY USE DATE:

Enter the desired date when the Project would require use of a facility. When the project is actually scheduled, this actual date performed should be entered here.

3a. START DATE This is the date you intend to begin using the facility for this project.

3b. END DATE This is the date you intend to finish the project.

3c. FACILITY USE REQUIREMENTS

LONG TERM Answer yes if the project will use the facility or system for a period of longer than 2 months.

CONTINUOUS Answer yes if the project will involve continuous operation at a facility area for periods of greater than 8 hours.

4. (Project) ID NUMBER:

A unique number assigned to the project under study.

5. PROJECT ENGINEER'S DEPARTMENT CODE:

A letter code identifying the preparer's Department.

6. ENGINEER'S NAME:

Including first name, middle initial, and last name.

7. CODE:

Preparer's full desk code.

8. ENGINEERS PHONE:

Commercial phone including area code, prefix and extension.

9. PROJECT TITLE:

The full title of the project being studied.

10. PROJECT ITEM:

The device or component which is the object of the project. Nomenclature in OP5 to be observed when possible. Otherwise use nomenclature by which data base would be searched in future.

11. PROJECT LOCATION:

If known at this time, the proposed project location including the following:

GRID:

Use grid identifier from Station Map

SECTOR:

Use sector identifier from Appendix A. if more than one grid is involved,

BUILDING NUMBER:

Use building ID if indoor work is involved

ROOM NUMBER:

Specify room number in building if work will be done in a specific room.

MULTIPLE GRID LOCATIONS

Answer yes if the project will be spread over more than one grid.

12. PROJECT ENCLOSED: (Yes or no)

Is the project to be conducted in a totally enclosed room or system, so that all the energy effects will be contained inside a structure.

Following these fields are a series of fields which are designed to provide information about actions that may affect the environment during the project under study. The fields pose questions which should be answered with a Y for yes, N for no or U for unknown. The fields cover changes related to the site description and construction that might occur; project design factors, and other factors. Consider both normal operations and reasonably foreseeable mishaps in answering these questions. These environmental data fields are shown in a section titled as follows:

ENVIRONMENTAL SECTION I, SITE DESCRIPTION AND CONSTRUCTION

FIGURE 2. Project Identification File, Environmental Section I Screen

```
                    ENVIRONMENTAL SCREENING WORKSHEET

THE INFORMATION CONTAINED IN THIS FORM IS DESIGNED TO HELP YOU SCREEN YOUR
PROJECT FOR POTENTIAL ENVIRONMENTAL PROBLEMS.  THE QUESTIONS ARE CAST IN A
YES/NO FORMAT.  YES ANSWERS INDICATE POSSIBLE ENVIRONMENTAL PROBLEMS.  IN
DESIGNING YOUR PROJECT, ANY STEPS TAKEN TO TO REDUCE THE NUMBER OF YES
ANSWERS THROUGH CHANGES IN PROJECT DESIGN WILL RESULT IN THE REDUCTION OF
POTENTIAL ENVIRONMENTAL PROBLEMS.

                              SECTION I
                    SITE DESCRIPTION AND CONSTRUCTION


1.1 WILL THE PROJECT REQUIRE MAJOR CONSTRUCTION OF PERMANENT OR SEMI-
PERMANENT STRUCTURES OR FACILITIES?  oneone

1.2 WILL THE STRUCTURE BE LOCATED WITHIN 200 FEET OF A WETLAND, MARSH,
RIVER, STREAM OR SWAMP?  onetwo

1.3 WILL THE STRUCTURE OR FACILITIES ASSOCIATED WITH THE STRUCTURE CREATE
STORMWATER RUNOFF, SOIL EROSION, OR DISCHARGE TO A WASTEWATER TREATMENT
SYSTEM?  onethree

1.4 WILL THE FACILITIES OR STRUCTURE BE USED IN THE STORAGE, HANDLING, OR
USE OF HAZARDOUS MATERIALS, AS DEFINED BY OPNAVINST 5090.1?  onefour

1.5 ARE ANY STORAGE TANKS TO BE CONSTRUCTED OR USED IN THE FACILITY?  onefive

1.6 ARE ANY UNDERGROUND TANKS TO BE CONSTRUCTED OR USED IN THE FACILITY?onesix

1.7 WILL THIS PROJECT INVOLVE THE NEED FOR DREDGING OR EXCAVATION OF ANY
WETLAND AREA?  oneseven
```

1.1 Will the project require major construction of permanent or semi-permanent structures or facilities?

Answer Y if the project requires significant new construction or modification of existing structures, and be prepared to describe the work to an environmental technical support person.

1.2 Will the structure be located within 200 feet of a wetland, marsh, river, stream or swamp?

Answer Y if the structure in 1.1 will be located near an environmentally sensitive place on or adjacent to the station or facility.

1.3 Will the structure or facilities associated with the structure create stormwater runoff , soil erosion, or discharge to a wastewater treatment system?

Answer Y if you think the structure in 1.1 might create events which might affect the air or land or water (above or below ground) around the structure including runoff or discharges to the surrounding environment.

1.4 Will the facilities or structure be used in the storage, handling, or use of Hazardous Materials, as defined by OPNAVINST 5090.1?

Answer Y if you think hazardous materials might be stored in the structure at any time in the future, over the structure's life cycle.

1.5 Are any storage tanks to be constructed or used in the facility?

Answer Y if you know or think any tanks or sumps for storage of liquids, gases or solids might be built or used temporarily in connection with the structure, over its life cycle.

1.6 Are any underground tanks to be constructed or used in the facility?

Answer Y if any of the tanks you foresee will be installed underground, temporarily or permanently.

1.7 Will this project involve the need for dredging or excavation of any wetland area?

Answer Y if you think a wetland area on the station or adjacent to it might be disturbed during the construction or by any of the activities in 1.1-1.6 above. Significant wetlands are described in the Appendix D. Environmental rules define wetlands broadly; therefore resolve uncertainties you may have with a Y so the question gets attention during the review process.

ENVIRONMENTAL SECTION II PROJECT DESIGN FACTORS

FIGURE 3. Project Identification File, Environmental Section II Screen

```
                              SECTION II
                         PROJECT DESIGN FACTORS

2.1 IS THIS PROJECT OR ITS EFFECTS TO OCCUR WITHIN 200 FEET OF ANY
STREAMS, SWAMPS, MARSHES, RIVERS, OR WETLANDS?

2.2 DOES THIS PROJECT INVOLVE THE USE OF ANY CHEMICALS, SOLVENTS, OR FUEL
MATERIALS WHICH MIGHT BE RELEASED INTO THE ENVIRONMENT EITHER INTENTIONALLY
OR BY ACCIDENT?

2.3 WHICH OF THE FOLLOWING DESCRIBE THE PHYSICAL FORM OF THE CHEMICALS,
SOLVENTS, OR FUELS TO BE USED? (Y FOR EACH FORM PRESENT)

          2.3a  SOLID     2.3b  LIQUID

          2.3c  GASSES    2.3d  SMOKE

2.4 WILL THE CONDUCT OF THIS PROJECT PRODUCE ANY HAZARDOUS WASTES?

2.5 WILL THIS PROJECT PRODUCE NOISE ABOVE 85 DB?

2.6 WILL THIS PROJECT PRODUCE VISIBLE SMOKE?

2.7 WILL THIS PROJECT INVOLVE THE USE OF WATER REACTIVE CHEMICALS?

2.8 WILL THIS PROJECT INVOLVE THE BURNING OF ANY METALS?

2.9 WILL THIS PROJECT INVOLVE THE DISTRIBUTING OF ANY MATERIAL OTHER THAN
STEEL DOWN FACILITY?

2.10 WILL THIS PROJECT INVOLVE THE USE, CREATION OF, OR GENERATION OF
IONIZING RADIATION?

2.11 WILL THIS PROJECT INVOLVE THE USE OF ANY WELLS?
```

2.1. Is any part of this project to be conducted or will project effects occur within 200 feet of any streams, swamps marshes, rivers, or wetlands?

The concern is potential effects on the surface or underground waters near the project site. Enter Y if you have any reason to think that the project or project effects might reach or adversely impact these waters in any way.

2.2 Does this project involve the use of any chemicals, solvents or fuel materials which might be released into the environment before, during or after the project, either intentionally or by accident.

The concern is pollution of the air by evaporation, spillage, discharge or other means. Answer Y if the project uses chemicals, solvents or fuel that are not contained, recycled or turned into hazardous wastes during the project.

2.3 Which of the following describe the physical form of the chemicals, solvents, or fuels to be used? (Y for each form present)

2.3a SOLID ..... 2.3b LIQUID .....
2.3c GASSES ..... 2.3d SMOKE.....

Enter a Y for each form of any chemical, solvent or fuel expected to be present during a project. If any chemicals, solvents or fuels will be utilized or present on the Facility during a project at least one Y must be shown in 2.3A-2.3D.

2.4 Will the conduct of this project produce any hazardous wastes?

If chemicals, solvents or fuels are present during a project, answer Y if any portion of the material or reactants are of a nature that they should be collected, stored or disposed of in a controlled manner. Do not enter N unless all the material is recycled, or transformed into a gas and dispersed to the atmosphere without any visible smoke, or objectionable odors, fumes, residues or effects.

2.5 Will this project produce noise above 85 db?

Enter Y if you have reason to believe that this will occur, or if the level is borderline.

2.6 Will this project produce visible smoke?

Enter Y unless you are convinced it is impossible for the project to generate any visible smoke, mists, gas clouds or other emissions, indoors or outdoors, even in a mishap.

2.7 Will this project involve the use of water reactive chemicals?

Consider this question from the perspective of reactions and consequent releases of materials that might occur during a response to an emergency during the project.

2.8 Will this project involve the burning of any metals?

Burning should be interpreted to mean any process which can produce smoke or residual particles from metals present, thereby posing a potential contamination threat to air, ground or water resources.

2.9 Will this project involve distributing any material other than steel downrange?

If this project will distribute any material other than steel projectiles, answer 'Y'.

2.10 Will this project involve the use, creation of, or generation of ionizing radiation?

Answer Y if ionizing radiation will be present within the scope of this project.

2.11 Will this project involve the use of any wells?

Answer Y if wells will be drilled or used within the scope of this project.

ENVIRONMENTAL SECTION III OTHER FACTORS

FIGURE 4. Project Identification File, Environmental Section III Screen

```
                                SECTION III
                                OTHER FACTORS

3.1    IS THERE A HISTORY OF PUBLIC CONTROVERSY SURROUNDING THIS OR SIMILAR
PROJECTS ?

3.2    DOES THE PROJECT TITLE CONTAIN THE WORD NUCLEAR?

3.3   IS THIS PROJECT TO BE CONDUCTED NEAR ANY KNOWN POPULATIONS OF
ENDANGERED SPECIES (BALD EAGLES ETC.)?

3.4   WILL THIS PROJECT INVOLVE THE USE OF AIRCRAFT FLYING
BELOW 2000 FEET?

3.5   WILL THIS PROJECT INVOLVE PERSONNEL ENGAGED IN TACTICAL OR COMBAT
EXERCISES?
```

3.1 Is there a history of public controversy surrounding this or <u>similar</u> projects ?

Enter Y if you have any knowledge of any complaints, protests or legal actions by the public or public interest groups or similar organizations about activities similar to your project, whether at Navy or other locations.

3.2 Does the project title contain the word Nuclear?

Before entering Y, try to describe the project in terms without referencing the word nuclear unless the term accurately reflects the intended use of radioactive materials.

3.3 Is this project to be conducted near any known populations of endangered species (Bald Eagles, etc.)?

If your project can reasonably be expected to have an effect on either the species or their habitat, answer Y.

3.4 Will this project involve the use of aircraft flying below 2000 feet?

In answering this question, consider aircraft that might be used or needed during the project or for other project-related purposes such as transporting project objects by air, etc.

3.5 Will this project involve personnel engaged in tactical or combat training

Enter Y if applicable.

Risk Events (PESHRA) Datafile

The data items contained in the PESHRA datafile are designed to provide a complete description of a particular risk present during a given PROJECT. The organization of this particular datafile is structured around the one energy, one exposure, one outcome premise. That is to say, for each energy, outcome, exposure, and control option, a single record is created in the dataset. Several descriptions may exist for a single energy with different exposures, control options etc. however each combination would be considered a single record. The following is a brief description of the datafields contained in the PESHRA datafile.

FIGURE 5 Risk Events Record, Section I

```
                PRELIMINARY ENVIRONMENTAL & SAFETY RISK ASSESSMENT SYSTEM
                            RISK EVENTS RECORD

PROJECT ID NUMBER: _________                    ENTRY NUMBER:  ____

                                SECTION I
                            ENERGY DESCRIPTION
This section describes the energy which initiates the production of harm.


ENERGY TYPE: _____________ ENERGY OUT or IN: _

ENERGY SOURCE DESCRIPTION: _____________________

ENERGY INTENSITY (PEAK):_____    UNITS: ____   DENSITY: ____

DENSITY UNITS: ____  ENERGY DURATION ____ DURATION UNITS:____

ENERGY SOURCE LOCATION:

    SECTOR ____  GRID:____  BLDG:____  ROOM NUMBER: ____

 MULTIPLE GRID LOCATION: _
```

1. PROJECT ID NUMBER:

   A unique number assigned to a particular project, the same number as in the PESHRAHDR datafile.

2. ENTRY NUMBER:

   A sequence number assigned to each successive record and incremented by one. The first record of the file in number 1.

SECTION I: ENERGY TYPE DESCRIPTION

Search for risks can be performed systematically by using energy trace and barrier analysis (ETBA) methods. See Appendix C for ETBA guidance.

3. ENERGY TYPE:

A short description of the energy which is expected to produce the harm to the exposure described. See Checklist of Energy Sources for ETBA, Appendix C..

4. ENERGY OUT or IN:

Is the energy received by the project (in = I) or projected by the project (out = O).

5. ENERGY SOURCE DESCRIPTION:

A brief description of the origins of the energy under study.

6. ENERGY INTENSITY (PEAK):

The level of energy necessary to produce the outcomes described later.

7. UNITS:

Units used to describe the energy intensity.

8. DENSITY:

The amount of energy received or emitted per unit area

9. DENSITY UNITS:

Unit of measure used to describe the energy density value (e.g. joules/sqcm)

10. ENERGY DURATION:

The time value an energy is emitted or received (a number).

11. DURATION UNITS:

Unit of measure used to describe the energy duration value (e.g. sec., min., hr.)

12. ENERGY SOURCE LOCATION:

The location of the source of energy described in 5. above including:

SECTOR: (found in Appendix A. of this manual)

GRID: (from the station map)

BLDG: (from the station map)

ROOM NUMBER: (as identified within the building)

MULTIPLE GRID LOCATION : 'Y' if source will occupy more than one grid.

SECTION II EVENTS DESCRIPTION

FIGURE 6 Risk Events Record, Section II

```
                              SECTION II
                          EVENTS DESCRIPTION
This section is used to describe the harm-producing processes and outcomes

EVENTS DESCRIPTION (describe how energy might produce the harm outcome)
_____________________________________________________
_____________________________________________________
_____________________________________________________

PERSON/OBJECT/GROUP EXPOSED TO ENERGY:

EXPOSURE NAME:  _____________________________

EXPOSURE LOCATED IN SECTOR: ____ EXPOSURE LOCATED IN GRID:  ____

MULTIPLE GRID LOCATION:  _

HARMFUL OUTCOMES (describe the injury/damage/loss to the exposure)
_____________________________________________________
_____________________________________________________
_____________________________________________________

UNCONTROLLED RISK LEVEL  (Rate this risk assuming no controls are used to
reduce the exposure, the probability or the severity of the incident)

SEVERITY CODE: _____ OCCURRENCE PROBABILITY: ___ URAC: _
```

13. EVENTS DESCRIPTION:

A short step-by-step description of the sequence of events synopsizing the process by which injury, harm, environmental effects or damage might be envisioned. Should describe how energy flow might be hypothesized to do harmful work.

14. PERSON/OBJECT/GROUP EXPOSED TO ENERGY:

A person or group or object exposed to the energy flow which might be harmed by the flow.

14.a EXPOSURE:

The name of the person, group or object at risk.

15. EXPOSURE LOCATED IN SECTOR:

The sector designation where the exposure is located. (See Sector Descriptions in Appendix A. of this manual)

16. EXPOSURE LOCATED IN GRID:

The grid location of the exposure. (from the station map)

16a. MULTIPLE GRID LOCATION: "Y" if exposure is located across more than one grid.

17. HARMFUL OUTCOMES:

A description of the reasonably foreseeable harm(injury, damage or loss) that might be produced by the energy flow process.

18. UNCONTROLLED RISK LEVEL:

The subjectively estimated rating of the risk of the events occurring without any controls applied to the system. These fields are coded according to the tables found in Appendix B, Figure B1, and include the following details:

18.a SEVERITY CODE:

The measure of the severity of harmful outcome or consequences of the events described.

18.b OCCURRENCE PROBABILITY:

The measure of the probability of the events occurring as described.

18.c SRAC:

The measure of the overall risk of the events using the risk assessment coding system.

RISK CONTROL OPTIONS

FIGURE 7 Risk Events Record, Control Options Section

```
CONTROL OPTIONS (describe a control option that would reduce this risk)
_____________________________________
_____________________________________
_____________________________________

CONTROLLED RISK LEVEL  (Rate this risk assuming the control option
described above is implemented)

SEVERITY CODE:  ___     OCCURRENCE PROBABILITY: ___ CRAC:  _

CONTROL  EVALUATION SUMMARY:  ENERGY CONTROL  STRATEGY:  __

 CONTROL EFFECTIVENESS RATING:

        CONTROL STRATEGY GROUP:___ CONTROL PRECEDENCE TYPE:  ___

        CONTROL RATING CODE:  ___
```

19. CONTROL OPTIONS:

An action that could be taken to limit or eliminate the exposure to, probability of or consequences of the events being considered. For uncontrolled risks of RAC 1 or 2, provide

20. CONTROLLED RISK LEVEL:

The subjectively estimated rating of the risk of the events occurring after implementing the controls described in 19 above, including:

20.a SEVERITY CODE:

The measure of severity of consequences with controls in place.

20.b OCCURRENCE PROBABILITY:

The measure of the probability of the events occurring as described with controls.

20.c CRAC:

The measure of the overall risk of the events using the risk assessment coding system provided in the Appendix B, Figure B1. , considering the reduction of risk from controls.

21. ENERGY CONTROL STRATEGY:

The Haddon energy control strategy (Appendix B, Figure B2.) which best describes the control option strategy selected to control the risks of these events.

22. CONTROL EFFECTIVENESS RATING:

This section is used to document the effectiveness of a particular control option. It consists of three fields which record the assignments from the Control Rating Code Table found in Appendix B, Figure B3.

22a. CONTROL STRATEGY GROUP:

This is the control strategy as identified in the row headings of the matrix shown in Appendix B, Figure B3.

22b. CONTROL PRECEDENCE TYPE:

This entry is also derived from the matrix in Appendix B, Figure B3. Entries in this field are derived from the column headings of the matrix.

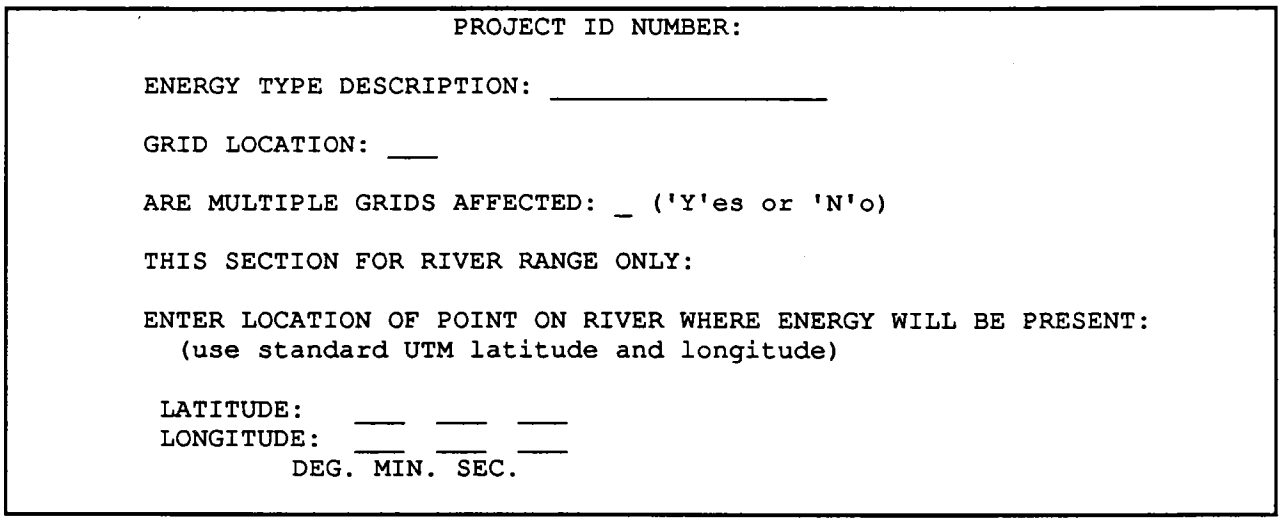
22c. CONTROL RATING CODE:

Finally, this entry indicates the overall rating of the control measures effectiveness. It is derived from the rating provided in the cell entries of the matrix in Appendix B, Figure B3. which corresponds to the control strategy and precedence type listed above.

The Energy Inventory (ENRGINV) Datafile.

The energy inventory datafile is a simple listing of the energy presented by a source and its location on NAVSWC. The datafile ,as shown in Figure 8, consists of the following fields:

Figure 8 Energy Inventory Datafile Screen



1. PROJECT ID NUMBER - This is the identification number assigned to the project generating the energy described.

2. ENERGY TYPE DESCRIPTION - Enter the name of the energy type you are documenting.

3. GRID LOCATION - Enter the location from the base grid map for each grid where the energy may project. Each grid is documented in a separate record unless the energy is found in all grids. If the energy will be found in all grids, enter 'all'. In this case, this is the only record necessary for this particular energy type. It does not matter what the intensity level of the energy is. If it is present in any quantity, it should be listed.

4. ARE MULTIPLE GRIDS AFFECTED - Enter 'Y' if the energy is expected to be found in more than one grid.

5. LATITUDE AND LONGITUDE - These two fields are used for documenting energies in the river range only. Enter the latitude and longitude in degrees, minutes, and seconds to identify the location of a particular energy. If your project does not involve the river range , this field is left blank.

DESCRIPTIONS OF FIELDS IN DATAFILE RECORDS

The names of fields in the datafile records are required for some standard NICCS(PEP) procedures and functions. The names of the fields in each datafile record are shown in Appendix F, Figures F1, F2 and F3, for the user's convenience.

A table showing the field attributes for each file is shown in Appendix F, Tables F1, F2 and F3.

USING THE REIT SYSTEM

Using the REIT system requires the knowledge of UDAP functions within the NICCS/PEP system. The operation is not complicated. The process requires you to create your own project file set, and then entering data into that file set. After the data are entered, the results of the work can be printed out and used as a part of the S&E risk acceptance decision package, and for the creation of the required SOP(s).

CREATING YOUR OWN PROJECT FILE SET.

Before starting an analysis which will require a preliminary risk assessment, a set of files must be created for that project. First the user creates the PESHRAHDR datafile within their own userid.

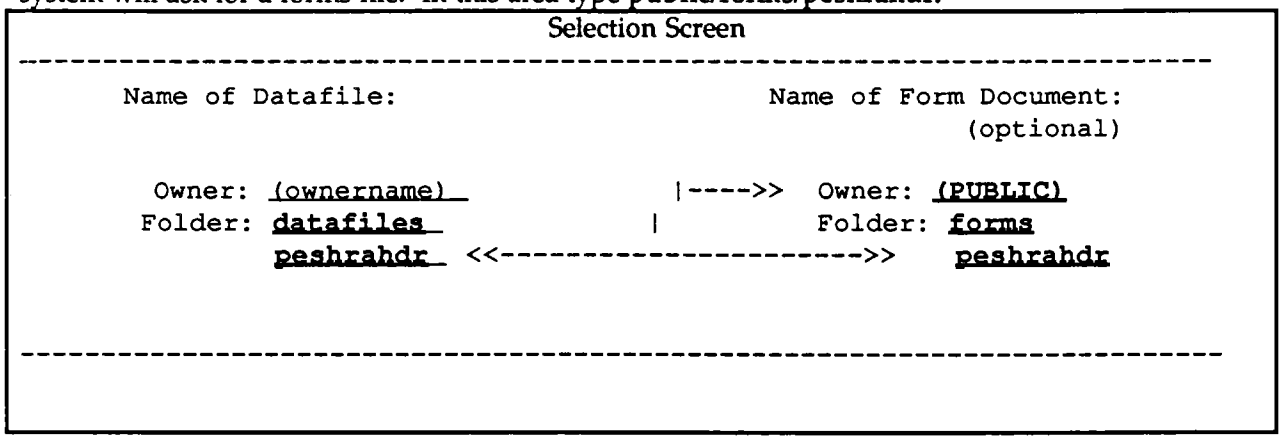
This is done by entering the UDAP function from the main system menu screen

```
                              Function Selection
    Category:    Function:
          A -Calendar
          B -Electronic Mail
          C -Phone
          D -Reminders
          E -Name/Address List
          F -Word Processing
    >     G  -User  Defined  Applications
          H -Folders
          I -Miscellaneous
          J -Lookup Tables
          K -Aliases/Distribution lists
          L -Administration
          M -Display System News
          N -NSWC Specific Functions

Depress key indicated to select CATEGORY desired, or EXIT:
```

When in UDAP, select UPDATE/CREATE.

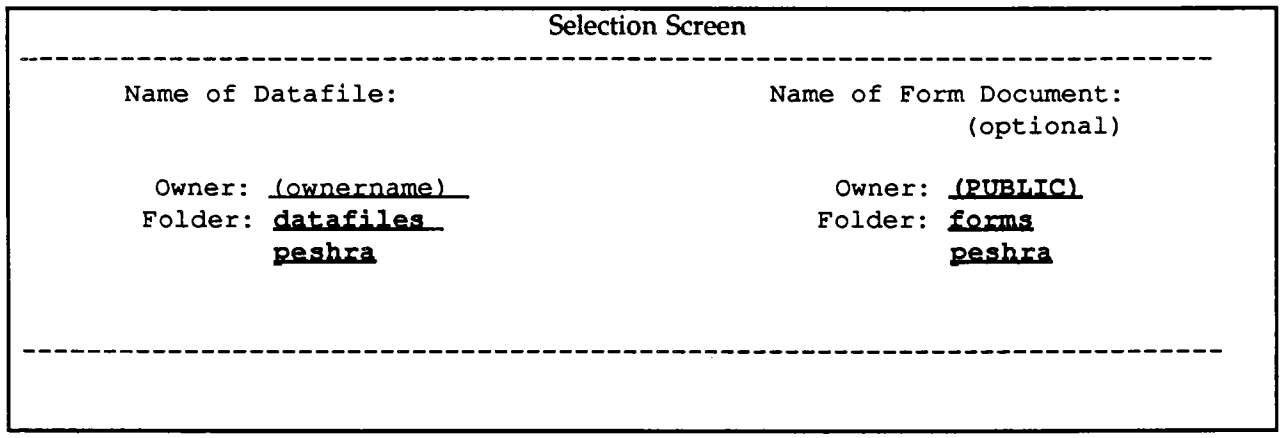
```
        Depress key indicated to select FUNCTION desired, or REJECT:

        >A - Update/Create datafile                          - update
          B - View datafile                                  - view
          C - Print datafile                                 - print
          D - Move datafile                                  - move
          E - Copy datafile                                  - copy
          F - Delete datafile                                - delete
          G - Change datafile ownership/permissions          - perm
          H - Print data records merged with document        - mrg-print
          I - Store data records merged with document        - mrg-store
          J - Procedural Query Invocation                    - procedure
          K - Edit datafile descriptor record                - desc-ed
```

Next you will be prompted for a datafile name in the format shown below. Enter **peshrahdr.** The system will ask for a forms file. In this area type **public/forms/peshrahdr.**



Press accept and the system will respond 'FILE DOES NOT EXIST, DO YOU WISH TO CREATE IT?' Press accept. your *header* file is now created.

To create the PESHRA *datafile* follow the same procedures for PESHRAHDR but substitute PESHRA for peshrahdr.



After you have created these two files you are ready to begin entering data about your project.

Exit back to the UDAP function menu.

ENTERING S&E RISK DATA

With the two system files created you are ready to create your analysis records. First enter the UDAP function CREATE/UPDATE.

```
Depress key indicated to select FUNCTION desired, or REJECT:

>A - Update/Create datafile                          - update
  B - View datafile                                  - view
  C - Print datafile                                 - print
  D - Move datafile                                  - move
  E - Copy datafile                                  - copy
  F - Delete datafile                                - delete
  G - Change datafile ownership/permissions          - perm
  H - Print data records merged with document        - mrg-print
  I - Store data records merged with document        - mrg-store
  J - Procedural Query Invocation                    - procedure
  K - Edit datafile descriptor record                - desc-ed
```

Enter PESHRAHDR as the datafile and use public/forms/peshrahdr as the form for the data.

Selection Screen

```
Name of Datafile:                          Name of Form Document:
                                                     (optional)

  Owner: (ownername)                         Owner: (PUBLIC)
 Folder: datafiles                          Folder: forms
         peshrahdr                                  peshrahdr
```

Press accept and the system will open the file. Press create record on the keyboard and the form shown in figure 8 will appear. Simply fill out each entry on the form. Fill out one record for each project you intend to study. The projectID number links this file and all the detail files that will follow, so you may want to note that number for later use.

When the record is complete, press accept and exit to the datafile selection screen.

FIGURE 8

PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT SYSTEM

PROJECT IDENTIFICATION FILE

TPR NUMBER: ..... SOP NUMBER: .....

SCHEDULED FACILITY USE DATE: .....

PROJECT ID NUMBER: ..... PROJECT ENGINEERS DEPARTMENT CODE: .....

PROJECT ENGINEERS NAME: _____ . _____ CODE: _.....
FIRST MI LAST

PROJECT ENGINEERS PHONE: (___).....

PROJECT TITLE: .....

.....

PROJECT ITEM: .....

PROJECT LOCATION: .....

SECTOR ... GRID .... BUILDING NUMBER .....

ROOM NUMBER: .... PROJECT ENCLOSED: ....

THIS COMPLETES THE BASIC DESCRIPTIVE INFORMATION FOR THE PESHRA

SECTION I

SITE DESCRIPTION AND CONSTRUCTION

1.1 Will the project require major construction of permanent or semi-permanent structures or facilities?

1.2 Will the structure be located within 200 feet of a wetland, marsh, river, stream or swamp?

1.3 Will the structure or facilities associated with the structure create stormwater runoff, soil erosion, or discharge to a wastewater treatment system?

1.4 Will the facilities or structure be used in the storage, handling, or use of Hazardous Materials, as defined by OPNAVINST 5090.1?

1.5 Are any storage tanks to be constructed or used in the facility?

1.6 Are any of these storage tanks underground?

1.7 Will this project involve the need for dredging or excavation of any wetland area?

SECTION II

PROJECT DESIGN FACTORS

2.1. Is any part of this project to be conducted or will project effects occur within 200 feet of any streams, swamps marshes, rivers, or wetlands?

2.2 Does this project involve the use of any chemicals, solvents or fuel materials which might be released into the environment before, during or after the project, either intentionally or by accident.

2.3 Which of the following describe the physical form of the chemicals, solvents, or fuels to be used? (y for each form present)

2.3a SOLID _ 2.3b LIQUID

2.3c GASSES _ 2.3d SMOKE

2.4 Will the conduct of this project produce any hazardous wastes?

2.5 Will this project produce noise above 85 db?

2.6 Will this project produce visible smoke?

2.7 Will this project involve the use of water reactive chemicals?

2.8 Will this project involve the burning of any metals?

2.9 Will this project involve distributing any material other than steel downrange?

2.10 Will this project involve the use, creation of, or generation of ionizing radiation?

2.11 Will this project involve the use of any wells?

SECTION III

OTHER FACTORS

3.1 Is there a history of public controversy surrounding this or similar projects ?

3.2 Does the project title contain the word Nuclear?

3.3 Is this project to be conducted near any known populations of endangered species (Bald Eagles etc.)?

3.4 Will this project involve the use of aircraft flying below 2000 feet?

3.5 Will this project involve personnel engaged in tactical or combat exercises?

(End Peshrahdr record)

When the header record has been entered and accepted, next open the **peshra** datafile under UDAP CREATE/UPDATE. As with the previous file, use **public/forms/peshra** as the form to open the file.

Selection Screen

```
-------------------------------------------------------------------------
      Name of Datafile:                          Name of Form Document:
                                                        (optional)

       Owner: (ownername)            ---->>  Owner: (PUBLIC)
      Folder: datafiles                      Folder: forms
              peshra      <<----------------->>    peshra


-------------------------------------------------------------------------
```

Press accept, then create new record. The screen in Figure 9 will be displayed. Be sure that the project id number you use in this file is the same as the id number used in the header file.

This file is used to describe the various risks your project may present. Each record is one complete risk with one outcome, one control, and one exposure. Create as many records as necessary to describe all reasonable risks associated with your project. Be sure to increment the entry number by one for each new record.

When you have finished entering information, press ACCEPT RECORD as before. You can then exit the system.

FIGURE 9. PESHRA RECORD SCREEN

PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT SYSTEM

RISK EVENT RECORD

PROJECT ID NUMBER: ..... ENTRY NUMBER: ...

SECTION I

ENERGY DESCRIPTION

THIS SECTION DESCRIBES THE ENERGY RELEASED IN THE EVENTS WHICH RESULT IN THE PRODUCTION OF HARM.

ENERGY TYPE: _____ ENERGY OUT OR IN:

ENERGY SOURCE DESCRIPTION:

ENERGY INTENSITY (PEAK): ____ UNITS: __ DENSITY:

DENSITY UNITS: ___ ENERGY DURATION: _DURATION UNITS:

ENERGY SOURCE LOCATION:

SECTOR _ GRID: __ BLDG: __ ROOM NUMBER:

ROOM NUMBER: __ PROJECT ENCLOSED:

SECTION II

EVENTS DESCRIPTION

This section is used to describe the harm-producing processes and outcomes.

EVENTS DESCRIPTION (describe how energy might produce the harm outcome)
.....
.....
.....

PERSON/OBJECT/GROUP EXPOSED TO ENERGY:

EXPOSURE NAME: .....

EXPOSURE LOCATED IN SECTOR: _ EXPOSURE LOCATED IN GRID:

HARMFUL OUTCOMES (describe the injury/damage/loss to the exposure)
.....
.....
.....

UNCONTROLLED RISK LEVEL (rate this risk assuming no controls are used to reduce the exposure, the probability or the severity of the incident)

SEVERITY CODE: ... OCCURRENCE PROBABILITY: ... SRAC: ...

CONTROL OPTIONS (describe a control option that would reduce this risk)
.....
.....
.....

CONTROLLED RISK LEVEL (rate this risk assuming the control option described above is implemented)

SEVERITY CODE: ... OCCURRENCE PROBABILITY: ... CRAC: ...

CONTROL STRATEGY SUMMARY:

ENERGY CONTROL CODE: ... CONTROL OPTION FAMILY: ...

ENERGY CONTROL STRATEGY: ... CONTROL RATING CODE: ...

End of the events description record.

Entering information in the energy inventory is accomplished through the same NICCS/PEP system functions described above for the PESHRA and PESHRAHDR files. The datafile to use is ENRGINV in conjunction with the form ENRGINV.

GENERATING OUTPUTS

Three report forms have been provided to generate output from the REIT system. These consist of the PESHRA report, the PESHRAHDR report and the ENRGINV report form. Using these report forms is straightforward.

The PESHRAHDR report.

This report requires the user to enter the database through update/create function in UDAP and select the record to be printed. After making the record selection (as documented in the Officepower manual) the user then enters the merge print or merge store function in UDAP. When prompted for the name of the datafile, enter PESHRAHDR. At the prompt for the report form, enter REPORTS, PESHRAHDR. Press accept and the system will ask you for a document name. Enter the name of the document you wish to create and press accept. The remaining process simply requires you print the document you have created. Appendix E, Figure E1. contains an example of the PESHRAHDR report.

The PESHRA reports

The PESHRAdatafile Output for the PESHRA datafile is generated in the same manner. The report form provided generates a condensed printout as shown in the example in Appendix E, Figure E2. . On generating the PESHRA report it is not necessary to select the records for printing. The report form selects all records in your datafile and sorts them automatically.

The process of generating a report for a risk acceptance decision package from the REIT system involves the PESHRA and PESHRAHDR files. The cover page and environmental screening questionnaire are generated from the PESHRAHDR file. By running this report first you can create the first three pages of your analysis document. Subsequently, running the PESHRA report and MERGE/STORING that output with your header document will create the entire preliminary risk assessment document for your risk acceptance decision package if all the data about the risks have been properly entered. This merged document can then be printed. After printing and before forwarding the outputs, it is usually prudent to proof read the outputs to ensure that the no changes are needed in any of the data fields.

The ENRGINV report

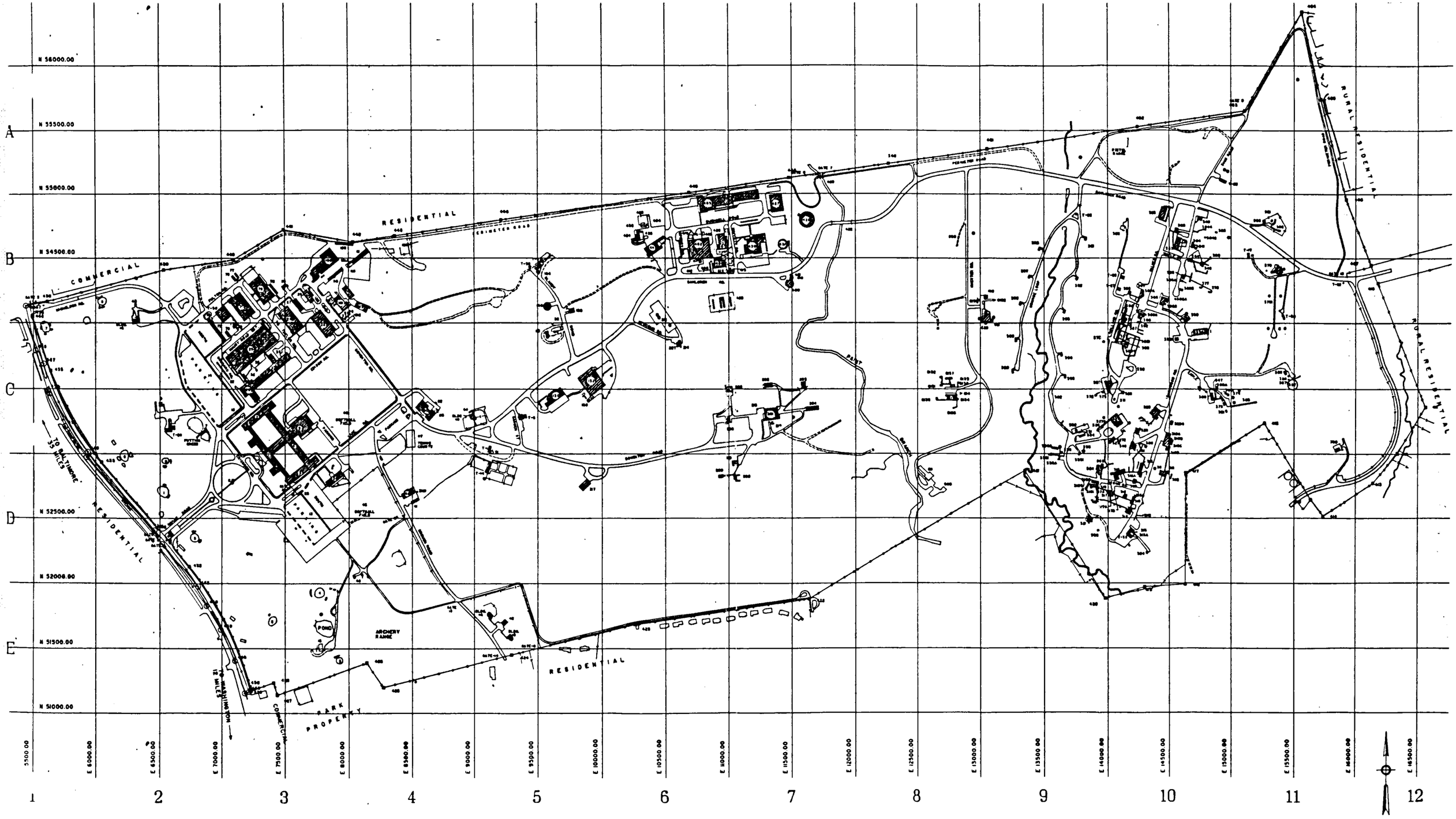
Finally, the ENRGINV report form is used to create a report listing for the energy inventory file ENRGINV. This report results in a simple listing of the inventory information contained in the file. An example of the ENRG report is found in Appendix E Figure E3.

SCANNING AND MANIPULATING DATA ON-SCREEN

The datafiles can be manipulated on screen using standard NICCS(PEP) procedures and functions. The names of the fields in each record are shown in Appendix F, Figures F1, F2 and F3, for the user's convenience. A table showing the field attributes for each file is shown in Appendix F, Tables F1, F2 and F3.

APPENDIX A

Station Grid and Sector Maps


N 58000.00
N 55500.00
N 55000.00
N 54500.00
N 52500.00
N 52000.00
N 51500.00
N 51000.00
A
B
C
D
E
1
2
3
4
5
6
7
8
9
10
11
12
E 5500.00
E 6000.00
E 6500.00
E 7000.00
E 7500.00
E 8000.00
E 8500.00
E 9000.00
E 9500.00
E 10000.00
E 10500.00
E 11000.00
E 11500.00
E 12000.00
E 12500.00
E 13000.00
E 13500.00
E 14000.00
E 14500.00
E 15000.00
E 15500.00
E 16000.00
E 16500.00
COMMERCIAL
RESIDENTIAL
COLMETCH ROAD
RESIDENTIAL
RURAL RESIDENTIAL
RURAL RESIDENTIAL
PLANT
TO BALTIMORE 35 MILES
RESIDENTIAL
ARCHERY RANGE
RESIDENTIAL
TO WASHINGTON 12 MILES
COMMERCIAL
PARK PROPERTY
250' 0 250' 500' 750' 1000'
1" = 300'

APPENDIX B

Figure B1 Haddon's 10 Energy Control Strategies

Figure B2. Risk Assessment Code Table

Figure B3. Control Rating Code Table

Appendix B, Figure B1

RISK ASSESSMENT CODE TABLE

Severity	Mishap probability A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

SEVERITY
Use the following to estimate the severity of a potential mishap attributable to a specific hazard without or with corrective action.

I = Catastrophic
II = Critical
III = Marginal
IV = Negligible

PROBABILITY
Use the following to estimate the mishap or illness probability over remaining life cycle of system, without or with corrective action.

A = Likely to occur frequently or within a short period of time
B = Probably will occur in time
C = May occur in time
D = Unlikely to occur

CRITICALITY TABLE

1 = CRITICAL
2 = SERIOUS
3 = MODERATE
4 = MINOR
5 = NEGLIGIBLE

Appendix B, Figure B2

Haddon's 10 Strategies

1. Prevent creation in first place
2. Reduce amount brought into being
3. Prevent release of what exists
4. Modify rate/distribution of release
5. Separate hazard from exposure in time/space
6. Separate hazard from exposure by a barrier
7. Modify basic attributes of hazard released
8. Make exposures more resistant to damage from hazard
9. Counter damage already done by hazard
10. Rehabilitate object harmed

Appendix B, Figure B3

CONTROL RATING CODE TABLE

HAZARD REDUCTION PRECEDENCE SEQUENCE

ENERGY CONTROL STRATEGY

		Design Change I	Passive Safety Device II	Active Safety Device III	Warning Device IV	Procedure V
Eliminate energy source	A	1	1	2	3	3
Limit energy accumulated	B	1	1	2	3	3
Prevent energy release	C	1	2	2	3	3
Provide barriers to energy flows	D	2	2	3	4	4
Change release patterns	E	2	3	4	4	5
Treat / minimize harm	F	3	3	4	5	5

APPENDIX C.

Energy Trace and Barrier Analysis

ETBA Hazard Identification Method

Work done to and by the system can be analyzed systematically using a qualitative method called Energy Trace and Barrier Analysis or ETBA. The ETBA analytical process is described in Figure C.

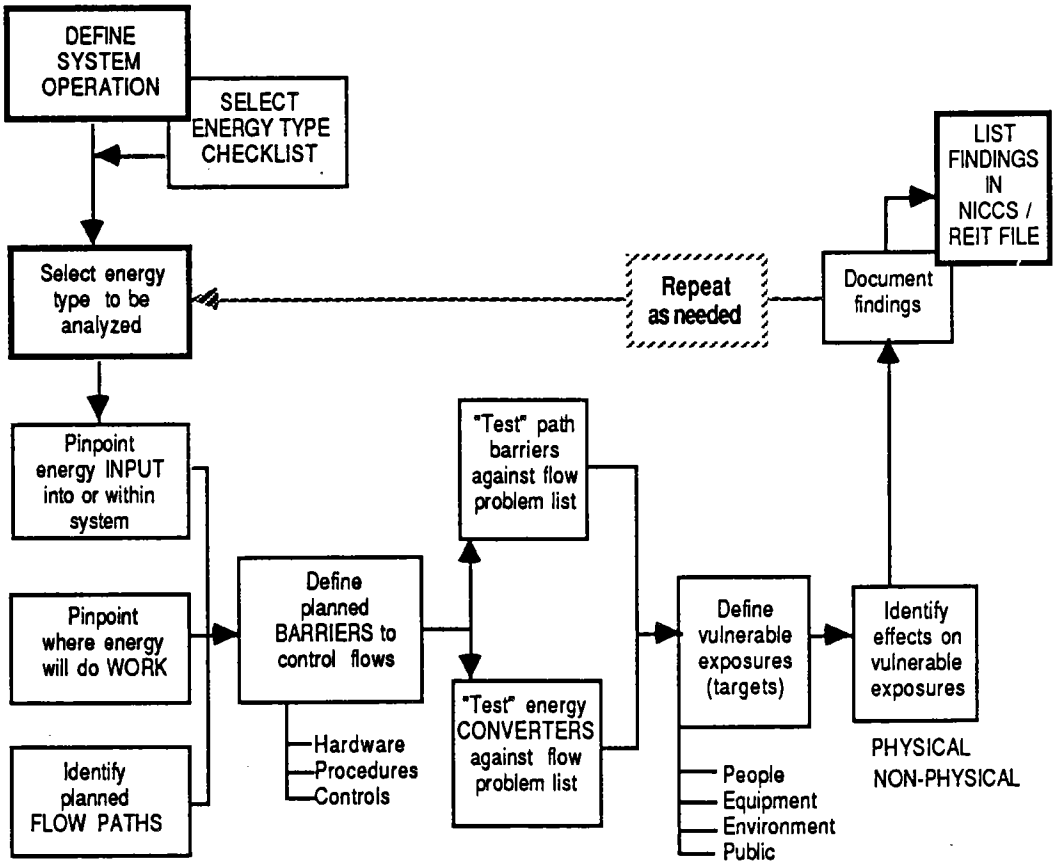
A check list to remind the analyst of possible candidates for energy traces is shown in the Energy Trace and Barrier Analysis Checklists on the following page. This check list may be reproduced for use as a checklist during analysis of an NSWC project. A copy of this list, with checkmarks, can be incorporated into the decision package to show reviewers what was analyzed, for complex projects.

The essence of the method is to identify each energy type either put into the system or produced by the system (see Checklist for thoughtstarters.) Sources external to the system must be considered for the potentially harmful work they can do to the system, and sources internal to the system must be considered for the work they can do to people and objects exposed to the system and its energies. Use the ETBA change analysis checklist section to suggest why the energy you are analyzing might get out of its designed barriers or controls, either during normal operations or during abnormal events. Trace each energy into, within and then out of the system, to the point(s) where people or objects (including environmental objects) might be exposed to the energy, and then considering how it might do harm(unwanted work) to each kind of exposure or to the system, until it is dissipated.

Where energies are generated by a project to produce energy fields such as noise, RF or pressure waves from explosions, the "fields" formed by those phenomena will have to be mapped before the affected grids and exposures can be identified and assessed.

As you consider each energy source, you can use the REIT entry screens to record your analysis "as you go." After you select an energy source, you can search the REIT data to see what others have identified as risks for that energy.

Figure C GENERAL ENERGY TRACE AND BARRIER ANALYSIS PROCESS



Source: Risk Assessment Techniques Manual
Transportation Safety Institute (1986)

CHECKLIST OF ENERGY SOURCES FOR ETBA

○ Sources external to system ❑ Sources internal to system

(1)[ ]Electrical
- ○ ❑ ac or dc current flows
- ○ ❑ stored electrical energy/discharges
- ○ ❑ electromagnetic emissions/RF pulses
- ○ ❑ induced voltages/currents
- ○ ❑ control voltages/ currents

(2)[ ] Mass/gravity/height(mgh)
- ○ ❑ trips and falls
- ○ ❑ falling /dropped objects
- ○ ❑ suspended objects

(3)[ ] Rotational kinetic
- ○ ❑ rotating machinery/gears/wheels
- ○ ❑ moving fan/propeller blades

(4)[ ] Pressure/volume/kinetic displacement (P/V/KD)
- ○ ❑ overpressure ruptures /explosions
- ○ ❑ vacuum growth
- ○ ❑ liquid spill/flood/buoyancy
- ○ ❑ expanding fluids/fluid jets
- ○ ❑ uncoiling object
- ○ ❑ ventilating air movement
- ○ ❑ trenching/digging/earth moving

(5)[ ] Linear kinetic
- ○ ❑ projectiles, missiles/aircraft in flt
- ○ ❑ rams, belts, moving parts
- ○ ❑ shears, presses
- ○ ❑ vehicle/equipment movement
- ○ ❑ springs, stressed members

(6)[ ] Noise / Vibration
- ○ ❑ Noise
- ○ ❑ Vibration

(7) ○ ❑ Moisture/humidity

(8)[ ] Chemical (acute and chronic sources)
- ○ ❑ anesthetic/asphyxiant
- ○ ❑ corrosive/
- ○ ❑ dissolving/solvent/lubricating
- ○ ❑ decomposable/degradable
- ○ ❑ deposited materials/residues
- ○ ❑ detonable
- ○ ❑ oxidizing/combustible/pyrophoric
- ○ ❑ polymerizable
- ○ ❑ toxic/carcinogenic/embryotoxic
- ○ ❑ waste/contaminating (air/land/water)
- ○ ❑ water reactive

(9)[ ] Thermal
- ○ ❑ radiant/burning/molten
- ○ ❑ conductive
- ○ ❑ convective/turbulent
- ○ ❑ evaporative/expansive heatg/coolg
- ○ ❑ thermal cycling
- ○ ❑ cryogenic

(10)[ ] Etiologic agents
- ○ ❑ viral
- ○ ❑ bacterial
- ○ ❑ fungal
- ○ ❑ parasitic
- ○ ❑ biological toxins

(11)[ ] Radiation
- ○ ❑ ionizing
- ○ ❑ non-ionizing/laser

(12) ○ ❑ Magnetic fields

(13)[ ] Living creatures or things
- ○ ❑ actions/interactions by people
- ○ ❑ actions by animals, other species
- ○ ❑ actions by trees, shrubs, etc.

Natural Energy Sources

(14)[ ] Terrestrial
- ○ earthquake
- ○ floods/drowning
- ○ landslide/avalanche
- ○ subsidence
- ○ compaction
- ○ cave-ins
- ○ underground water flows
- ○ glacial
- ○ volcanic

(15)[ ] Atmospheric
- ○ wind velocity, density, direction
- ○ rain (warm/cold/freezing)
- ○ snow/hail/sleet
- ○ lightning/electrostatic
- ○ particulates/dusts/aerosols/powders
- ○ sunshine/solar
- ○ acid rain, vapor/gas clouds
- ○ air (warm/cold/freezing, inversion)

ETBA CHANGE ANALYSIS CHECKLIST

Energy Flow Changes
1. Flow too much/too little/none at all
2. Flow too soon/too late/not at all
3. Flow too fast/too slowly
4. Flow blocked/built up/release
5. Wrong form/wrong type input or flow
6. Cascading effects of release

Changers in Barriers
7. Barrier too strong/too weak
8. Barrier designed wrong
9. Barrier too soon/too late
10. Barrier degraded/failed completely
11. Barrier impeded flow/enhanced flow
12. Wrong barrier type selected

Adapted from US AEC MORT SAN 821-2, 2/12/73

ETBA Hazard Identification Method

Work done to and by the system can be analyzed systematically using a qualitative method called Energy Trace and Barrier Analysis or ETBA. The ETBA analytical process is described in Figure C.

A check list to remind the analyst of possible candidates for energy traces is shown in the Energy Trace and Barrier Analysis Checklists on the following page. This check list may be reproduced for use as a checklist during analysis of an NAVSWC project. A copy of this list, with checkmarks, can be incorporated into the decision package to show reviewers what was analyzed, for complex projects.

The essence of the method is to identify each energy type either put into the system or produced by the system (see Checklist for thoughtstarters.) Sources external to the system must be considered for the potentially harmful work they can do to the system, and sources internal to the system must be considered for the work they can do to people and objects exposed to the system and its energies. Use the ETBA change analysis checklist section to suggest why the energy you are analyzing might get out of its designed barriers or controls, either during normal operations or during abnormal events. Trace each energy into, within and then out of the system, to the point(s) where people or objects (including environmental objects) might be exposed to the energy, and then considering how it might do harm(unwanted work) to each kind of exposure or to the system, until it is dissipated.

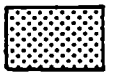
Where energies are generated by a project to produce energy fields such as noise, RF or pressure waves from explosions, the "fields" formed by those phenomena will have to be mapped before the affected grids and exposures can be identified and assessed.

As you consider each energy source, you can use the REIT entry screens to record your analysis "as you go." After you select an energy source, you can search the REIT data to see what others have identified as risks for that energy.

Appendix D Constraints Map

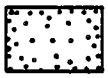
(See Master Plan for additional details)

CONSTRAINT SUMMARY MAP



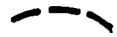
ENTIRE BASE

MAN MADE:
Areas restricted due to explosive arcs, shelter area needs, air operation, etc.



MAIN SITE

Contaminated or hazardous areas



H E R O Arcs

Developed: center operations

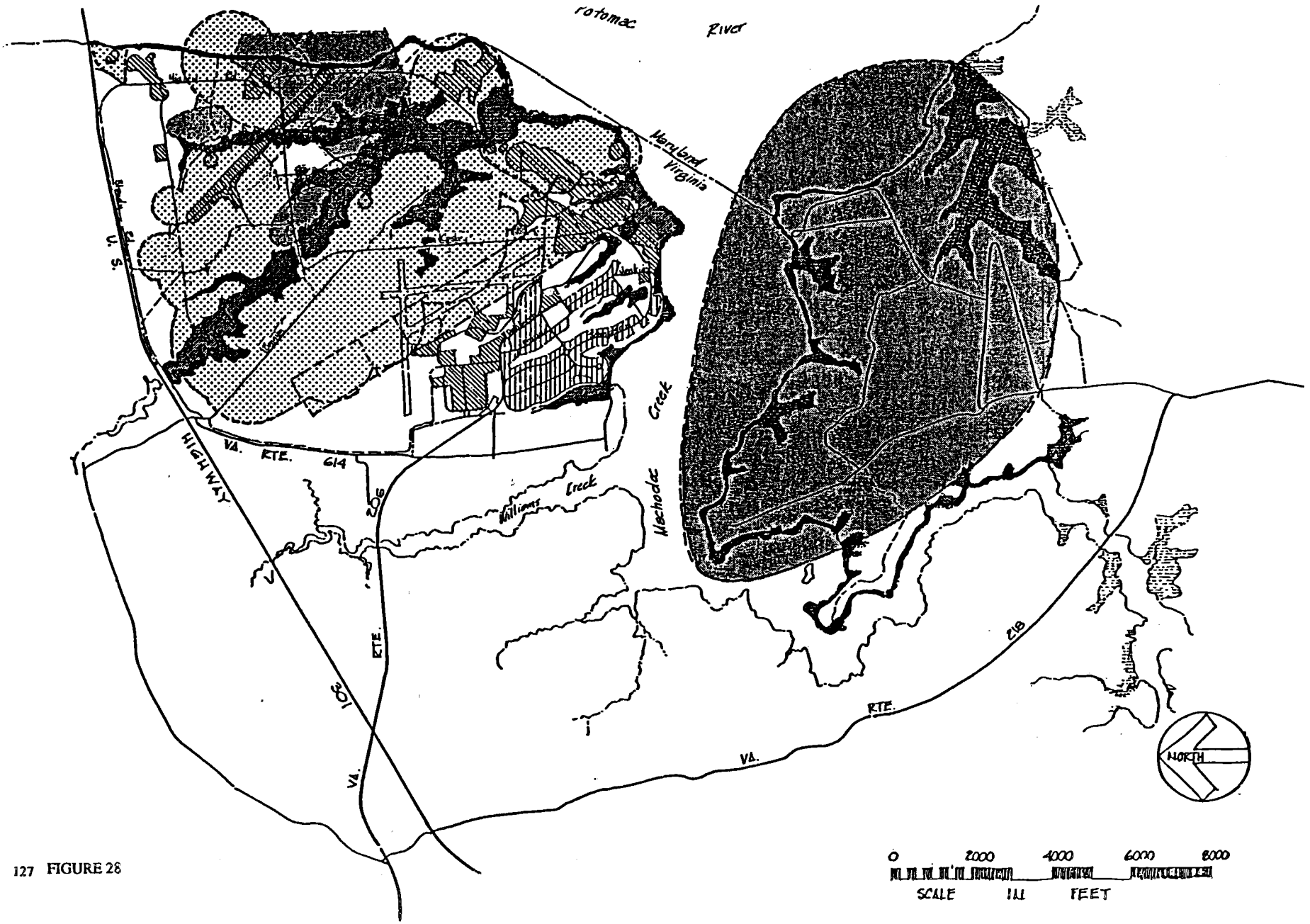
Developed: housing &personnel support

MAIN SITE

NATURAL:
Water & marsh areas; land within 100 year flood plain

ENTIRE BASE

FIGURE 28 and FIGURE 28A



127 FIGURE 28

APPENDIX E

Examples of REIT Datafile Reports

Appendix E1. Sample peshrahdr File Report

Appendix E2. Sample peshra File Report

Appendix E3. Sample enrginv File Report

Appendix E1. Sample peshrahdr File Report

Fri Aug 10, 1990 1:26 pm datafile gmeier/reit/datafiles/peshrahdr Page 1

PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT SYSTEM
PROJECT IDENTIFICATION FILE

TPR NUMBER: 1234567890 SOP NUMBER: 1234567

SCHEDULED FACILITY USE: START DATE: 08/12/90 END DATE: 12/11/90

FACILITY USE REQUIREMENT LONG TERM: *

CONTINUOUS: *

PROJECT ID NUMBER: 123456 PROJECT ENGINEERS DEPARTMENT CODE: a

PROJECT ENGINEERS NAME: abcdefghijklmno a abcdefghijklmno CODE: 123456
FIRST MI LAST

PROJECT ENGINEERS PHONE: (123) 456-7890

PROJECT TITLE: aadadadadadadadad

ITEM NAME: adadadadadadada

ITEM NUMBER: 123456789

PROJECT LOCATION: dddd gggg hhhhh
SECTOR GRID BUILDING NUMBER

ROOM NUMBER: 12345 PROJECT ENCLOSED:

MULTIPLE GRID LOCATION: *

THIS COMPLETES THE BASIC DESCRIPTIVE INFORMATION FOR THE PESHRA SYSTEM.
THIS NEXT SECTION IS THE ENVIRONMENTAL SCREENING WORKSHEET.

ENVIRONMENTAL SCREENING WORKSHEET

THE INFORMATION CONTAINED IN THIS FORM IS DESIGNED TO HELP YOU SCREEN YOUR PROJECT FOR POTENTIAL ENVIRONMENTAL PROBLEMS. THE QUESTIONS ARE CAST IN A YES/NO FORMAT. YES ANSWERS INDICATE POSSIBLE ENVIRONMENTAL PROBLEMS. IN DESIGNING YOUR PROJECT, ANY STEPS TAKEN TO TO REDUCE THE NUMBER OF YES ANSWERS THROUGH CHANGES IN PROJECT DESIGN WILL RESULT IN THE REDUCTION OF POTENTIAL ENVIRONMENTAL PROBLEMS.

SECTION I
SITE DESCRIPTION AND CONSTRUCTION

1.1 Will the project require major construction of permanent or semi-permanent structures or facilities? *

1.2 Will the structure be located within 200 feet of a wetland, marsh, river, stream or swamp? *

1.3 Will the structure or facilities associated with the structure create stormwater runoff, soil erosion, or discharge to a wastewater treatment system? *

1.4 Will the facilities or structure be used in the storage, handling, or use of Hazardous Materials, as defined by OPNAVINST 5090.1? *

1.5 Are any storage tanks to be constructed or used in the facility? *

1.6 Are any underground tanks to be constructed or used in the facility? *

1.7 Will this project involve the need for dredging or excavation of any wetland area? *

SECTION II
PROJECT DESIGN FACTORS

2.1 Is this project or its effects to occur within 200 feet of any streams, swamps, marshes, rivers, or wetlands? *

2.2 Does this project involve the use of any chemicals, solvents, or fuel materials which might be released into the environment either intentionally or by accident? *

2.3 Which of the following describe the physical form of the chemicals, solvents, or fuels to be used? (y for each form present)

2.3a SOLID * 2.3b LIQUID *

2.3c GASSES * 2.3d SMOKE *

2.4 Will the conduct of this project produce any hazardous wastes? *

2.5 Will this project produce noise above 85 db? *

2.6 Will this project produce visible smoke? *

2.7 Will this project involve the use of water reactive chemicals? *

2.8 Will this project involve the burning of any metals? *

2.9 Will this project involve the distributing of any material other than steel down range? *

2.10 Will this project involve the use, creation of, or generation of ionizing radiation? *

2.11 Will this project involve the use of any wells? *

SECTION III
OTHER FACTORS

3.1 Is there a history of public controversy surrounding this or similar projects ? *

3.2 Does the project title contain the word Nuclear? *

3.3 Is this project to be conducted near any known populations of endangered species (Bald Eagles etc.)? *

3.4 Will this project involve the use of aircraft flying below 2000 feet? *

3.5 Will this project involve personnel engaged in tactical or combat exercises? *

Appendix E2. Sample peshra File Report

PROJECT ID NUMBER CE27-88

ENTRY RATING	CONTROLLED RISK LEVEL	UNCONTROLLED RISK LEVEL	CONTROL
0001	SEV: I PROBAB: D RAC: 3	SEV: I PROBAB: C RAC: 2	4

ENERGY TYPE	EXPOSURE NAME	SEC	GRD
electromagnetic	HE ordnance in vehicle on road	15+	e25

EVENT — Electromagnetically induced heat initiates dielectric heating of high energy explosive material

HARMFUL OUTCOMES — Explosion could injure occupants in Notes building, and the occupants of vehicle transporting HE plus damage NOTES bldg, vehicle, road, other NOTES equipment

CONTROL OPTIONS — Block road and reroute all vehicles with HE via A to I to the experimental areas to avoid fields > 2200 V/m

ENTRY RATING	CONTROLLED RISK LEVEL	UNCONTROLLED RISK LEVEL	CONTROL
0002	SEV: I PROBAB: D RAC:3	SEV: I PROBAB: C RAC: 2	4

ENERGY TYPE	EXPOSURE NAME	SEC	GRD
electromagnetic	vehicle on road D	15	e24+

EVENT — indirect initiation of explosive: rf electrical field induces transients in firing circuits, circuit triggers detonation, detonation harms objects in QD arc

HARMFUL OUTCOMES — severe injury to vehicle driver, nearby structures, truck, also minor damage to NOTES facility possible if in QD arc

CONTROL OPTIONS — Install barrier activated by NOTES command console activation to keep vehicles of roads B and D in 200 v/m arcs to allow time to clear roads before shot

(etc., to end of selection)

Appendix E3. Sample enrginv File Report

FACILITY ENERGY BY GRID REPORT

GRID	ENERGY TYPE DESCRIPTION	PROJECT ID	LATITUDE	LONGITUDE
a13	sample	1111111	' "/	' "
c22	EEA Harris	1	' "/	' "
c23	EEA Harris	1	' "/	' "
d22	EEA Harris	1	' "/	' "
d23	EEA Harris	1	' "/	' "
e22	EEA Churchill	1	' "/	' "
e23	EEA Churchill	1	' "/	' "
e23	electromagnetic	1	' "/	' "
e25	electromagnetic	CE27-88	' "/	' "
f22	EEA Churchill	1	' "/	' "
f22	electromagnetic	1	' "/	' "
f22	explosive	1	' "/	' "
f23	EEA Churchilll	1	' "/	' "
f23	electromagnetic	1	' "/	' "
f25	electromagnetic	1	' "/	' "
y18	EEA Howland Point	1	' "/	' "

Note: Most energy entries shown above define grids in which facility elements are located. These were initial entries into this new database to provide baseline identifier when searching datafile for energy conflicts in a specific grid. See underlined pair in grid f22, for example.

APPENDIX F

FIELD NAME DATA

Appendix F Figure F1. peshrahdr File Field Names

LABELS are in UPPER CASE, field names are in lower case letters

```
        PROJ. NUMBER
         tstidnum
         PRELIMINARY ENVIRONMENTAL AND SAFETY RISK ASSESSMENT SYSTEM
                         PROJECT IDENTIFICATION FILE

TPR NUMBER:  tprnum                              SOP NUMBER:  sopnum

SCHEDULED FACILITY USE:     START DATE:  testdate   END DATE:  tsendate

FACILITY USE REQUIREMENT       LONG TERM:  lterm

                               CONTINUOUS:  contuse

PROJECT ID NUMBER:  tstidnum      PROJECT ENGINEERS DEPARTMENT CODE:  seccod

PROJECT ENGINEERS NAME:  engfnam          e  englnam        CODE: engcod
                          FIRST          MI   LAST

PROJECT ENGINEERS PHONE:  (phac) phpx-phext

PROJECT  TITLE:  testit[1]
                 testit[2]
                 testit[3]

ITEM NAME:   testitm

ITEM NUMBER:  titnum


PROJECT LOCATION:  sect       grid                bldnu
                  SECTOR      GRID             BUILDING NUMBER

              ROOM NUMBER:  bldrm           PROJECT ENCLOSED:  e

              MULTIPLE GRID LOCATION:  multigridproj

THIS COMPLETES THE BASIC DESCRIPTIVE INFORMATION FOR THE PESHRA SYSTEM.
THIS NEXT SECTION IS THE ENVIRONMENTAL SCREENING WORKSHEET.
```

ENVIRONMENTAL SCREENING WORKSHEET

THE INFORMATION CONTAINED IN THIS FORM IS DESIGNED TO HELP YOU SCREEN YOUR PROJECT FOR POTENTIAL ENVIRONMENTAL PROBLEMS. THE QUESTIONS ARE CAST IN A YES/NO FORMAT. YES ANSWERS INDICATE POSSIBLE ENVIRONMENTAL PROBLEMS. IN DESIGNING YOUR PROJECT, ANY STEPS TAKEN TO TO REDUCE THE NUMBER OF YES ANSWERS THROUGH CHANGES IN PROJECT DESIGN WILL RESULT IN THE REDUCTION OF POTENTIAL ENVIRONMENTAL PROBLEMS.

SECTION I
SITE DESCRIPTION AND CONSTRUCTION

1.1 WILL THE PROJECT REQUIRE MAJOR CONSTRUCTION OF PERMANENT OR SEMI-PERMANENT STRUCTURES OR FACILITIES? oneone

1.2 WILL THE STRUCTURE BE LOCATED WITHIN 200 FEET OF A WETLAND, MARSH, RIVER, STREAM OR SWAMP? onetwo

1.3 WILL THE STRUCTURE OR FACILITIES ASSOCIATED WITH THE STRUCTURE CREATE STORMWATER RUNOFF, SOIL EROSION, OR DISCHARGE TO A WASTEWATER TREATMENT SYSTEM? onethree

1.4 WILL THE FACILITIES OR STRUCTURE BE USED IN THE STORAGE, HANDLING, OR USE OF HAZARDOUS MATERIALS, AS DEFINED BY OPNAVINST 5090.1? onefour

1.5 ARE ANY STORAGE TANKS TO BE CONSTRUCTED OR USED IN THE FACILITY? onefive

1.6 ARE ANY UNDERGROUND TANKS TO BE CONSTRUCTED OR USED IN THE FACILITY?onesix

1.7 WILL THIS PROJECT INVOLVE THE NEED FOR DREDGING OR EXCAVATION OF ANY WETLAND AREA? oneseven

PROJECT DESIGN FACTORS

2.1 IS THIS PROJECT OR ITS EFFECTS TO OCCUR WITHIN 200 FEET OF ANY STREAMS, SWAMPS, MARSHES, RIVERS, OR WETLANDS? twoone

2.2 DOES THIS PROJECT INVOLVE THE USE OF ANY CHEMICALS, SOLVENTS, OR FUEL MATERIALS WHICH MIGHT BE RELEASED INTO THE ENVIRONMENT EITHER INTENTIONALLY OR BY ACCIDENT? twotwo

2.3 WHICH OF THE FOLLOWING DESCRIBE THE PHYSICAL FORM OF THE CHEMICALS, SOLVENTS, OR FUELS TO BE USED? (Y FOR EACH FORM PRESENT)

2.3a SOLID twothreea 2.3b LIQUID twothreeb

2.3c GASSES twothreec 2.3d SMOKE twothreed

2.4 WILL THE CONDUCT OF THIS PROJECT PRODUCE ANY HAZARDOUS WASTES? twofour

2.5 WILL THIS PROJECT PRODUCE NOISE ABOVE 85 DB? twofive

2.6 WILL THIS PROJECT PRODUCE VISIBLE SMOKE? twosix

2.7 WILL THIS PROJECT INVOLVE THE USE OF WATER REACTIVE CHEMICALS? twoseven

2.8 WILL THIS PROJECT INVOLVE THE BURNING OF ANY METALS? twoeight

2.9 WILL THIS PROJECT INVOLVE THE DISTRIBUTING OF ANY MATERIAL OTHER THAN STEEL DOWN RANGE? twonine

2.10 WILL THIS PROJECT INVOLVE THE USE, CREATION OF, OR GENERATION OF IONIZING RADIATION? twoten

2.11 WILL THIS PROJECT INVOLVE THE USE OF ANY WELLS? twoeleven

SECTION III
OTHER FACTORS

3.1 IS THERE A HISTORY OF PUBLIC CONTROVERSY SURROUNDING THIS OR SIMILAR PROJECTS ? threeone

3.2 DOES THE PROJECT TITLE CONTAIN THE WORD NUCLEAR? threetwo

3.3 IS THIS PROJECT TO BE CONDUCTED NEAR ANY KNOWN POPULATIONS OF ENDANGERED SPECIES (BALD EAGLES ETC.)? threethree

3.4 WILL THIS PROJECT INVOLVE THE USE OF AIRCRAFT FLYING BELOW 2000 FEET? threefour

3.5 WILL THIS PROJECT INVOLVE PERSONNEL ENGAGED IN TACTICAL OR COMBAT EXERCISES? threefive

Appendix F. Figure F2. peshra File Field Names

LABELS are in UPPER CASE, field names are in lower case letters

```
 tstidnum    entn       enrgcls            tgt                                uncrac
                PRELIMINARY ENVIRONMENTAL & SAFETY RISK ASSESSMENT SYSTEM
                                RISK EVENT RECORD

PROJECT ID NUMBER:  tstidnum                                ENTRY NUMBER:  entn

                                      SECTION I
                                  ENERGY DESCRIPTION
This section describes the energy    which  initiates the production of
harm.


ENERGY TYPE: enrgcls              ENERGY OUT or IN:  enrgstat

ENERGY SOURCE DESCRIPTION:  enrgsrcdesc

ENERGY INTENSITY (PEAK):  enrgintmin  UNITS:  enrgintunt  DENSITY:  enrden

DENSITY UNITS: enrdnunit ENERGY DURATION:enrduration DURATION UNITS:enrdurunt

ENERGY SOURCE LOCATION:

    SECTOR  enrgscsect GRID:enrgscgrid  BLDG:enrgscbld  ROOM NUMBER:ergscroom

    MULTIPLE GRID LOCATION:  multgridsrc
```

SECTION II
EVENTS DESCRIPTION

This section is used to describe the harm-producing processes and outcomes

EVENTS DESCRIPTION (describe how energy might produce the harm outcome)

event[1]
event[2]
event[3]

PERSON/OBJECT/GROUP EXPOSED TO ENERGY:

EXPOSURE NAME: tgt

EXPOSURE LOCATED IN SECTOR: tgts EXPOSURE LOCATED IN GRID: tgtg

MULTIPLE GRID LOCATION: multigridexp

HARMFUL OUTCOMES (describe the injury/damage/loss to the exposure)

outcms[1]
outcms[2]
outcms[3]

UNCONTROLLED RISK LEVEL (Rate this risk assuming no controls are used to reduce the exposure, the probability or the severity of the incident)

SEVERITY CODE: uncsev OCCURRENCE PROBABILITY: uncprob URAC: uncrac

CONTROL OPTIONS (describe a control option that would reduce this risk)

cntrl[1]
cntrl[2]
cntrl[3]

CONTROLLED RISK LEVEL (Rate this risk assuming the control option described above is implemented)

SEVERITY CODE: csever OCCURRENCE PROBABILITY: cprobab CRAC: crac

CONTROL EVALUATION SUMMARY: ENERGY CONTROL STRATEGY: ecntrlcd

CONTROL EFFECTIVENESS RATING:

CONTROL STRATEGY GROUP:cntofam CONTROL PRECEDENCE TYPE: enconstr

CONTROL RATING CODE: cntrcode

Appendix F Figure F3. enrginv File Field Names

LABELS are in UPPER CASE, field names are in lower case letters

```
        PROJ. NUMBER          ENERGY TYPE                      GRID
        projidnum             enrtype                          gri

                        FACILITY ENERGY INVENTORY FORM

PROJECT ID NUMBER:  projidnum

ENERGY TYPE DESCRIPTION:  enrtype

GRID LOCATION:  gridlocation

ARE [] MULTIPLE GRIDS AFFECTED:  allgrids ('Y'es or 'N'o)


THIS SECTION FOR RIVER RANGE ONLY:

ENTER LOCATION OF POINT ON RIVER WHERE ENERGY WILL BE PRESENT:
  (use standard UTM latitude and longitude)

 LATITUDE:   latdeg  latmin   latsec
 LONGITUDE:  londeg  lonmin   lonsec
             DEG. MIN. SEC.
```

Appendix F Table F1 peshrahdr File Field Descriptions

FIELD NAME	TYPE	MLC	LENGTH
tstidnum	text	1	7
tprnum	text	1	11
sopnum	text	1	8
testdate	date	1	10
tsendate	date	1	10
lterm	yes-or-no	1	1
contuse	yes-or-no	1	1
seccod	text	1	2
engfnam	text	1	16
engmi	text	1	2
englnam	text	1	16
engcode	text	1	7
phac	number	1	4
phpx	number	1	4
phext	number	1	5
testit	text	3	41
testitm	text	1	41
titnum	text	1	10
sect	text	1	5
grid	text	1	4
bldnum	text	1	6
bldrm	text	1	6
encl	yes-or-no	1	1
multigridproj	yes-or-no	1	1
oneone	yes-or-no	1	1
onetwo	yes-or-no	1	1
onethree	yes-or-no	1	1
onefour	yes-or-no	1	1
onefive	yes-or-no	1	1
onesix	yes-or-no	1	1
oneseven	yes-or-no	1	1
twoone	yes-or-no	1	1
twotwo	yes-or-no	1	1
twothreea	yes-or-no	1	1
twothreeb	yes-or-no	1	1
twothreec	yes-or-no	1	1
twothreed	yes-or-no	1	1
twofour	yes-or-no	1	1
twofive	yes-or-no	1	1
twosix	yes-or-no	1	1
twoseven	yes-or-no	1	1
twoeight	yes-or-no	1	1
twonine	yes-or-no	1	1
twoten	yes-or-no	1	1
twoeleven	yes-or-no	1	1
threeone	yes-or-no	1	1
threetwo	yes-or-no	1	1
threethree	yes-or-no	1	1
threefour	yes-or-no	1	1
threefive	yes-or-no	1	1

Appendix F Table F2 peshra File Field Descriptions

FIELD NAME	TYPE	MLC	LENGTH
tstidnum	text	1	7
entnum	number	1	5
enrgcls	text	1	16
enrgstat	text	1	2
enrgsrcdesc	text	1	41
enrgintmin	text	1	6
enrden	text	1	8
enrdnunit	text	1	7
enrduration	text	1	7
enrdurunt	text	1	6
enrgscsect	text	1	4
enrgscgrid	text	1	6
enrgscbld	text	1	5
ergscroom	text	1	5
multgridsrc	text	1	2
event	text	3	61
tgt	text	1	31
tgtsec	text	1	4
ergscroom	text	1	5
multgridsrc	text	1	2
event	text	3	61
tgt	text	1	31
tgtsec	text	1	4
tgtgrid	text	1	5
multigridexp	text	1	2
outcms	text	3	61
uncsev	text	1	4
uncprob	text	1	2
uncrac	number	1	2
cntrl	text	3	61
csever	text	1	4
cprobab	text	1	2
crac	text	1	2
ecntrlcd	text	1	2
cntofam	text	1	4
enconstr	text	1	2
cntrcode	text	1	2

Appendix F Table F3 enrginv File Field Descriptions

FIELD NAME	TYPE	MLC	LENGTH
projidnum	text	1	11
enrtype	text	1	31
gridlocation	text	1	4
allgrids	yes-or-no	1	1
latdeg	number	1	3
latmin	number	1	3
latsec	number	1	3
logdeg	number	1	3
logmin	number	1	3
logsec	number	1	3